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**The Giant Pill-Millipedes, order Sphaerotheriida –  
An annotated species catalogue  
with morphological atlas  
and list of apomorphies (Arthropoda: Diplopoda)**

Thomas Wesener



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Cover: The Montagne de Français giant pill-millipede, *Zoosphaerium solitarium* Wesener, 2009, one of Madagascar's numerous microendemic species, occurring only on top of a single karstic hill in northern Madagascar. Photos by Jörn Köhler, Darmstadt.

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# The Giant Pill-Millipedes, order Sphaerotheriida – An annotated species catalogue with morphological atlas and list of apomorphies (Arthropoda: Diplopoda)

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**Abstract.** This is the first complete catalogue documenting all species, genera, and higher categories of the giant pill-millipedes, order Sphaerotheriida. It provides a list of all 39 known potential apomorphies of members of the order that could be used as a template for future phylogenetic studies at the ordinal level in the Diplopoda. The catalogue also includes illustrations of key characters of the order, as well as illustrations of the intraordinal variation of the female vulva and male posterior telopods. It further includes a key to all five Sphaerotheriida families, short descriptions for each of the 24 genera and a summary of the state of knowledge of the ecology and development of the giant pill-millipedes. Synonymies for all 24 valid genera are listed in a convenient tabular format. All 351 valid Sphaerotheriida species and their synonyms are listed; 14 remain *nomina dubia*, while five cannot be placed in any family. For each family, genus and species, bibliographic citations are presented, including all subsequent citations in chronological order. For each species, the number and location of type depositories as well as the locality data from the literature are provided. *Bothrobolum sulcatulum* (Butler, 1872) is presented as a new combination (ex *Zephronia*). Lectotypes are designated for *Zoosphaerium blandum* (deSaussure & Zehntner, 1902), *Z. globulus* & *Z. imbecillum* (both synonyms of *Z. voeltzkowianum* (deSaussure & Zehntner, 1897)), and *Z. piligerum* (deSaussure & Zehntner, 1897).

**Key words.** Species diversity; Diplopoda; millipede

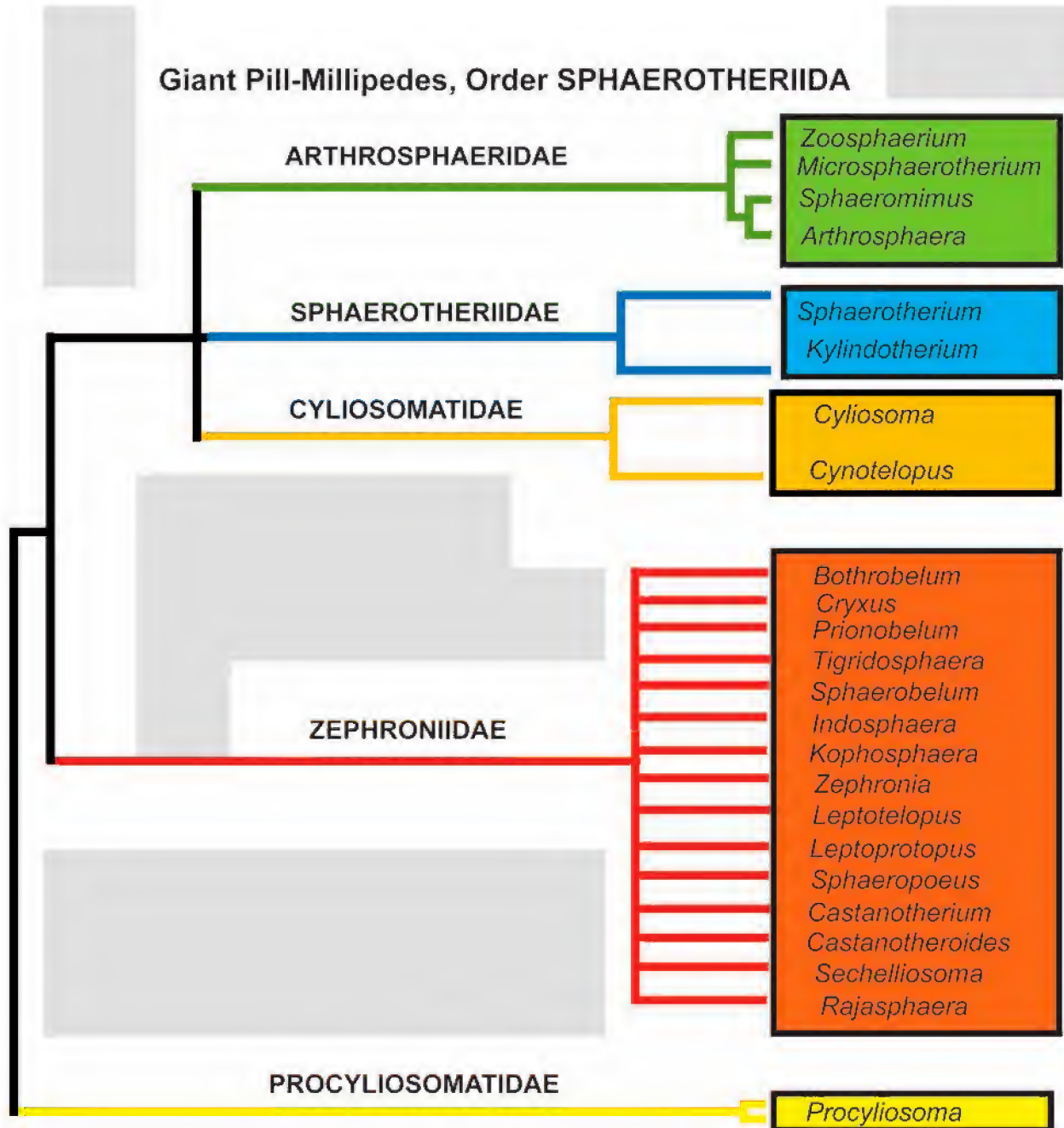
## INTRODUCTION

Catalogues containing a comprehensive treatment of a taxonomic group at the species level are fundamental works needed for any form of substantial systematic or evolutionary research in zoology.

Diplopoda catalogues produced in the second half of the 20th century form some of the most important publications in the field of Myriapodology. The first modern catalogue was a genus catalogue (Jeekel 1971), followed by a classification (Hoffman 1980) and a recently updated genus list (Shelley et al. 2000). At the ordinal level, the first steps to species catalogues were again taken by Jeekel, who presented the first complete overview of the orders Siphonophorida (Jeekel 2001) and Glomeridesmida (Jeekel 2004). Complete species catalogues at the ordinal level are also available for Polyxenida (Nguyen Duy-Jacquemin & Geoffroy 2003) and Callipodida (Stoev et al. 2008). Species-rich families such as the Rhinocricidae in the order Spirobolida (Marek et al. 2003) and the Paradoxosomatidae in the order Polydesmida (Nguyen & Sierwald 2013) have been catalogued; there are also regional Diplopoda catalogues for North America (Hoffman 1999) and Australia (Mesibov 2014).

The order Sphaerotheriida (giant pill-millipedes) contains five families with 351 described species and is a moderately diverse order within the class Diplopoda. The order, together with the orders Glomeridesmida and Glomerida, belongs to the basal subclass Pentazonia (Blanke & Wesener 2014).

**Historical review, classification and phylogeny:** The first giant pill-millipede species to be described was *Julus ovalis* by Linné (Linnaeus 1758) in his famous 10th edition of the *Systema Naturae*. The first genus-name associated with the Sphaerotheriida, *Cryxus*, was based on this species, described by Leach (1814), but then forgotten for more than 150 years until its revival (Jeekel 1971) and later redescription (Golovatch et al. 2012). The first ‘classification’ of the order was undertaken by Brandt (1833, 1841); he divided the Sphaerotheriida into the genera *Sphaerotherium* and *Sphaeropoeus*. For a long time species were placed into genera by their geographic origin: all Asian species were viewed as members of the family Sphaeropoeidae (synonym of Zephroniidae), while the South African, Malagasy, and Australian genera were placed in the Family Sphaerotheriidae. It was not until the first modern classification (Jeekel 1974) that the Indian Zephroniidae of the genus *Arthrosphaera* were discovered to be closely related to their Malagasy counterparts, becoming part of the Sphaerotheriidae. The first phylogenetic analysis based on numerous morphological characters (Wesener & VandenSpiegel 2009) found the Sphaerotheriidae to be polyphyletic, with the Australian genus *Procyliosoma* standing basally to the Zephroniidae and the remaining Sphaerotheriidae, which were divided into the Arthrosphaeridae from India and Madagascar and the Sphaerotheriidae *sensu stricto* from South Africa. The Australian genera *Cyliosoma* and *Cynotelopus* were



**Fig. 1.** Current phylogeny and classification of the giant pill-millipedes, order Sphaerotheriida. Colours correspond to those of the distribution map (Fig. 2).

placed in the new family Cyliosomatidae (Wesener 2014a). Recently published phylogenies (Fig. 1, Table 1) are based on 100 morphological characters (Wesener & Vanden 2009, Wesener 2014a), and DNA (Wesener et al. 2010b).

Following recent revisions of genera (e.g. Vanden-Spiegel et al. 2002, Wesener & Sierwald 2005b, Wesener & Wägele 2008; Golovatch et al. 2012), many named giant pill-millipede species can now be put into an exist-

ing genus. The recent revisions at the generic level are also the explanation for the high number of generic level synonymies in the order: 24 synonyms are available for the 24 valid genera (Table 2).

Despite the renewed progress in the last decades, much work remains to be done. For example, in the SE Asian family Zephroniidae the genera *Bothrobelum* Verhoeff, 1924, *Sphaeropoeus* Brandt, 1833, and *Tigridosphaera* Jeekel, 2000 are in need of a revision. As a result of the

**Table 1.** Current classification of the Sphaerotheriida. Modified after Wesener 2014.**Order Sphaerotheriida**

## Procyliosomatidae (10 species)

*Procyliosoma* (10 species, Silvestri, 1917) E Australia and New Zealand

## Zephroniidae (143 species + 1 nomen dubium)

*Bothrobolum* (2 species, Verhoeff, 1924) Borneo*Cryxus* (1 species, Leach, 1814) Vietnam*Prionobelum* (7 species, Verhoeff, 1924) Vietnam, China*Tigridosphaera* (4 species, Jeekel, 2000) Malaysia*Sphaerobelum* (5 species, Verhoeff, 1924) Thailand, Vietnam*Indosphaera* (2 species, Attems, 1935) NE India, S. Myanmar*Kophosphaera* (7 species, Attems, 1935) NE India, Nepal*Zephronia* (38 species, Gray, 1832) NE India, Myanmar, Cambodia, Malaysia, Thailand*Leptotelopos* (1 species, Silvestri, 1897) Myanmar*Leptoprotopus* (1 species, Silvestri, 1897) Sumatra*Sphaeropoetus* (20 species, Brandt, 1833) Malaysia, Vietnam, Sumatra, Borneo, Java*Castanotherium* (50 species, Pocock, 1895) Borneo, Butung, Java, Sumatra, Sulawesi, Philippines*Castanotheroides* (3 species, Chamberlin, 1921) Borneo, Philippines*Sechelliosoma* (1 species, Mauriès, 1980) Seychelles*Rajasphaera* (1 species, Attems, 1935) Borneo

## Sphaerotheriidae (55 species + 1 nomen dubium)

*Sphaerotherium* (54 species, Brandt, 1833) South Africa, Zimbabwe*Kylindotherium* (1 species, Attems, 1926) South Africa

## Arthrosphaeridae (106 species + 11 nomina dubia)

*Arthrosphaera* (40 species, Pocock, 1895) S India, Sri Lanka*Sphaeromimus* (10 species, de Saussure & Zehntner, 1902) SE Madagascar*Microsphaerotherium* (2 species, Wesener & VandenSpiegel, 2007) Madagascar*Zoosphaerium* (54 species, Pocock, 1895) Madagascar

## Cylisosomatidae (20 species)

*Cylisosoma* (19 species, Silvestri, 1917) W & E Australia*Cynotelopos* (1 species, Jeekel, 1986) W Australia

## Nomina dubia (4 species)

unclear status of the genera, it is as yet not possible to provide a key to the genus-level taxa of the Sphaerotheriida.

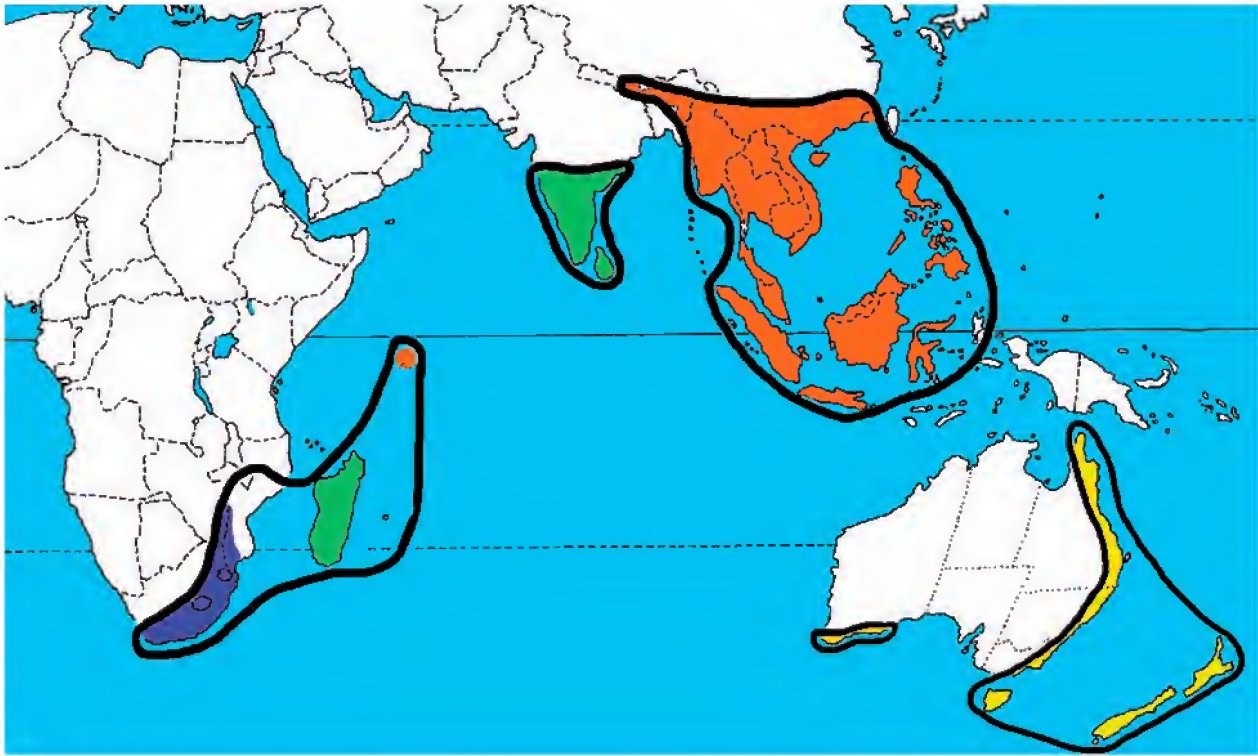
In addition, there is as yet no phylogenetic framework for the species-rich genera; a subdivision of the family Zephroniidae, containing the bulk of Sphaerotheriida species and genera, has not yet been attempted based on phylogenetic methods. Furthermore, despite great progress in some genera (South Africa: VandenSpiegel et al. 2002; Madagascar: Wesener 2009; China: Mauriès 2001; Thailand: Wongthamwanich et al. 2012a), many species descriptions are still problematic and do not allow a clear species identification. Because there are numerous species in urgent need of revision, specimens from some areas of distribution, such as India, Australia and Indonesia, are

close to impossible to identify without extensive revisionary work.

**Biogeography:** Sphaerotheriida show an interesting distribution pattern (Shelley & Golovatch 2011) and occur in disjunct areas: eastern South Africa, Madagascar, southern India and Sri Lanka, Australia and New Zealand, the Seychelles and Southeast Asia from Nepal and western parts of China to the Philippines and Sulawesi (Fig. 2).

Few dispersal events are traceable in the current area of distribution, and all natural Sphaerotheriida populations are notably absent from any Darwinian islands (=islands of volcanic origin). Anthropogenic dispersal events are also few and probably limited to a Sri Lankan species oc-





**Fig. 2.** Distribution map of the order Sphaerotheriida. Modified after Shelley & Golovatch 2011. **Yellow** = Procyllosomatidae and Cyllosomatidae; **Red** = Zephroniidae; **Green** = Arthrosphaeridae; **Blue** = Sphaerotheriidae.

curring in a plantation in Tanzania (Enghoff 1977), South African giant pill-millipedes in Malawi (VandenSpiegel et al. 2002) and potentially Mauritius (Wesener & Wägele 2008), as well as the suspicious occurrence of a member of the southeast Asian family Zephroniidae on the Seychelles islands (Golovatch & Korsos 1992, Wesener & VandenSpiegel 2009).

**Development and life history:** Very little is known about the egg and larval development of the Sphaerotheriida. Very young larval stadia have been found in a cocoon of dirt, indicating that eggs are wrapped in such a cocoon after oviposition (Dohle 1992). This is similar to the treatment of eggs in the related order Glomerida (Heath et al. 1974; Iatrou & Stamou 1991). While the egg-laying process has never been observed in giant pill-millipedes, gravid adult females of Malagasy species have been found with several hundred eggs inside. A few thousand eggs were found in the gigantic females of *Zoosphaerium* (Wesener & Sierwald 2005a; personal observation). Indian *Arthrosphaera* deposit 400–800 eggs (Ambarish & Sridhar 2016). While variation at the generic or even specific levels might occur, the recorded egg numbers in giant pill-millipedes are higher by a factor of 10 to 100 than in the related order Glomerida, where 12–100 eggs are deposited (Heath et al. 1974). After hatching the develop-

ment is hemianamorphic. First, the larvae add segments and leg pairs after each moult, then, after reaching their full number of segments (12) and leg pairs (21), the small animals grow until they reach their final size and continue to moult without any further change in their size. After reaching sexual maturity, both sexes continue to moult, and, at least in some species, also to grow. The full larval development is only fragmentarily known (Enghoff et al. 1993), e.g., the first larval stadium has never been observed. Small, immature males possess telopods that show special characteristics of their immaturity (see Wesener & Sierwald 2005a). Because true larvae (juvenile specimens lacking the complete number of segments) are so rarely encountered (personal observation), their development most likely occurs rapidly with little time passing between moults. Adult specimens seem to moult only once a year (Wongthamwanich et al. 2012b; Ambarish & Sridhar 2014c; personal observation), and appear to rest for several weeks during the process. The moulting seems to happen often during a time of drought, e.g. the southern hemisphere winter, June–August. The lifespan of the Sphaerotheriida is unknown. As sexually mature females of the larger species exist in at least four or five different size classes, the lifespan might be as high as ten years or more.

**Ecology:** Ecology and behaviour of the Sphaerotheriida are, with a few notable exceptions, especially from India, quite unknown. Giant pill-millipedes are mainly found in humid forests, but they also occur in dry areas on Madagascar (the spiny forest ecosystem, e.g., Wesener 2009), and South Africa (Schubart 1958), as well as in coastal scrub in Western Australia (Main et al. 2002). Sphaerotheriida seem to be absent from non-forested or bushy areas. Giant pill-millipedes are important consumers of leaf-litter and are known to enrich the soil of plantations in India (e.g., Ashwini & Sridhar 2002, 2005, 2006). Aside from the Indian *Arthrosphaera*, only the giant pill-millipedes of Thailand have been the subject of basic ecological studies (Wongthamwanich et al. 2012b). Several studies exist on the importance of giant pill-millipedes for improving the soil quality and as ‘composters’, especially in India (see above).

Several species in South Africa (Haacker & Fuchs 1972) and Madagascar (Wesener & Sierwald 2005a) are adapted to tree-climbing and can suppress the enrolment reflex while on branches or trees.

While some species have been found in caves (Wesener 2009, Wesener et al. 2014), Sphaerotheriida is one of the few orders of Diplopoda in which no troglomorphic traits, e.g., loss of colouration or ocelli, are known in any species (Golovatch 2015).

Although Sphaerotheriida are mainly known from forests at lower or middle elevations up to 1800 m, mountaintop endemics are known from Madagascar (Wesener 2009) and South Africa (Schubart 1958); species have been recorded from the Himalayas up to 2700 m (Golovatch & Martens 1996, Wesener 2015).

Two or three species of giant pill-millipedes are found in sympatry in most parts of their range, while up to seven different species were recorded in the same forest on Madagascar (Wesener 2009).

**Giant pill-millipedes as medicine:** Some giant pill-millipedes are utilized in South Africa for traditional medicine. The species *Sphaerotherium punctulatum*, locally called ‘Ifinyezi’ is dried, burnt and then drunk to prevent bad luck (Jones & Jones 2000). Other species of *Sphaerotherium* are regularly available in South African alternative medicine markets (Herbert et al. 2003).

**Predators of giant pill millipedes:** Giant pill-millipedes are the only large-bodied millipede taxon without defensive secretions and depend entirely on their enrolling behaviour for protection (Shear 2015). Little and only anecdotal evidence exists regarding potential predators of Sphaerotheriida. South African chlamydephorid slugs are specialized predators of giant pill-millipedes (Herbert 2000). Generalist predators occasionally prey on giant pill-millipedes. Ants (Formicidae) are among these generalist predators, giant pill-millipede remains were found

around ant nests in Madagascar (Wesener & Sierwald 2005a); while in Cambodia individually hunting ants as well as socially hunting species prey on giant pill-millipedes (Peeters & De Greef 2015). Large birds like Malagasy Ground Rollers or Ibis species swallow giant pill-millipedes whole (Raseroka 1975; Thorstrom & Lind 1999). Larger mammal predators like the mongoose *Gallidia elegans* (Wesener & Sierwald 2005a), the genet *Genetta tigrina* (Roberts et al. 2007) or South African elephant shrews (Linn et al. 2007) are able to break smaller specimens with their teeth. On Madagascar, Red-bellied and Rufous lemurs (*Eulemur fulvus rufus* and *E. rubriventer*) feed on tree-climbing giant pill-millipedes, apparently just biting them into sizable pieces (Overdorff 1993).

**Parasites of giant pill millipedes:** Giant pill-millipedes are hosts to internal and external parasites. Internally, cephaline gregarines (Karandikar & Rodgi 1955, Janardan & Ramachandran 1983) are often found in the intestine. The nematode family Thelasmotidae with the genus *Desmicola* is found in different Asian genera of giant pill-millipedes (Hugot et al. 1991). Most parasitic records in the Sphaerotheriida deal with nematomorphs of the genera *Rhigonema* and *Glomerinema*, which were recorded in species from Madagascar (Waerebeke 1984, 1985a, 1985b), Asia (Waerebeke 1986), Africa (Hunt 2002), and New Zealand (Clark 1978). Externally, at least species from India, Madagascar and South Africa are often found with numerous, morphologically adapted parasitic mites (personal observation). Fungi of the Laboulbeniales group grow on a New Zealand species of giant pill-millipede (Rossi & Weir 1998), while unspecified fungi grow on *Zoosphaerium arboreale* from Madagascar (Wesener & Sierwald 2005a).

**Sound production:** Aside from their ability to roll tightly into a ball, giant pill-millipedes, possibly uniquely in the Diplopoda, can stridulate. Stridulation has only been studied in the family Sphaerotheriidae, where males of *Sphaerotherium* produce species-specific vibrations that apparently overcome the enrolment reflex of the female and allow for mating to begin (Haacker 1969, 1974, Wesener et al. 2011). Sound production has so far not been studied in the family Arthrosphaeridae, where both males and females are equipped with stridulation organs (Wesener & VandenSpiegel 2009). A male stridulation organ (a third different one) seems also to exist in the monotypic zephroniid genus *Leptotelopus* (Pocock 1890b).

**Genetic studies:** Only a handful of molecular studies (single genes, a mitochondrial, and a transcriptome) have been conducted involving a giant pill-millipede species (at least as of 01.2016). The pioneering studies were those focusing on the phylogeny of the Myriapoda in general, utilizing two (Regier & Shultz 2001) or three nuclear protein-



**Table 2.** Genus-level synonymies in the order Sphaerotheriida.

Genus Synonym	Valid Genus	Synonymy established
<i>Cylisosmella</i> Verhoeff, 1924	<i>Procyliosoma</i> Silvestri, 1917	Jeekel 1986: 38
<i>Syncyliosoma</i> Silvestri, 1917	<i>Procyliosoma</i> Silvestri, 1917	Jeekel 1986: 38
<i>Indosphaera</i> Attems, 1936	<i>Indosphaera</i> Attems, 1935	Jeekel 2001: 15
<i>Lophozephronia</i> Attems, 1936	<i>Leptotelopus</i> Silvestri, 1897	Jeekel 1971: 26
<i>Chinosphaera</i> Attems, 1935	<i>Prionobelum</i> Verhoeff, 1924	Mauriès 2001: 139
<i>Tonkinobelum</i> Verhoeff, 1924	<i>Sphaeropoeus</i> Brandt, 1833	Jeekel 1974: 46
<i>Pantitherium</i> Attems, 1932	<i>Sphaeropoeus</i> Brandt, 1833	Jeekel 1974: 46
<i>Lissosphaera</i> Attems, 1943	<i>Sphaeropoeus</i> Brandt, 1833	Jeekel 1974: 46
<i>Borneopoeus</i> Verhoeff, 1924	<i>Castanotherium</i> Pocock, 1895	Hoffman 1976: 120
<i>Pulusphaera</i> Attems, 1935	<i>Castanotherium</i> Pocock, 1895	Hoffman 1976: 120
<i>Luzonosphaera</i> Wang, 1951	<i>Castanotheroides</i> Chamberlin, 1921	Jeekel 2001: 30
<i>Bournellum</i> de Saussure & Zehntner, 1902	<i>Sphaerotherium</i> Brandt, 1833	VandenSpiegel et al. 2002: 145
<i>Eubournellum</i> Attems, 1908	<i>Sphaerotherium</i> Brandt, 1833	Jeekel 1971: 25
<i>Natalobelum</i> Verhoeff, 1924	<i>Sphaerotherium</i> Brandt, 1833	VandenSpiegel et al. 2002: 145
<i>Neobournellum</i> Attems, 1908	<i>Sphaerotherium</i> Brandt, 1833	VandenSpiegel et al. 2002: 145
<i>Oligaspis</i> Wood, 1865	<i>Sphaerotherium</i> Brandt, 1833	VandenSpiegel et al. 2002: 145
<i>Tetraconosoma</i> Verhoeff, 1924	<i>Sphaerotherium</i> Brandt, 1833	VandenSpiegel et al. 2002: 145
<i>Trochosoma</i> Chamberlin, 1921	<i>Arthrosphaera</i> Pocock, 1895	Jeekel 2001: 7
<i>Trivandrobium</i> Verhoeff, 1937	<i>Arthrosphaera</i> Pocock, 1895	Jeekel 2001: 7
<i>Odontosternum</i> Attems, 1943	<i>Arthrosphaera</i> Pocock, 1895	Jeekel 2001: 7
<i>Globotherium</i> Brolemann, 1922	<i>Zoosphaerium</i> Pocock, 1895	Jeekel 1999: 9
<i>Heligmasoma</i> Chamberlin, 1921	<i>Zoosphaerium</i> Pocock, 1895	Wesener & Wägele 2008: 38
<i>Epicylisosoma</i> Silvestri, 1917	<i>Cylisosoma</i> Pocock, 1895	Wesener 2014: 199
<i>Paracyliosoma</i> Verhoeff, 1928	<i>Cylisosoma</i> Pocock, 1895	Jeekel 1986: 36

coding genes (Regier et al. 2005). Unfortunately, as apparently no voucher specimens were deposited, the identity of the studied species remains doubtful. An additional study focusing on arthropod phylogeny sequenced the complete 18S ribosomal DNA gene as well as H3, U2, COI and 16S for an Australian member of the Sphaerotheriida (Giribet et al. 2001) whose identity is not totally clear. The first and so far only study focusing on the phylogeny of the Sphaerotheriida utilizing the complete 18S as well as 16S and COI (Wesener et al. 2010) failed to provide resolution of the deeper nodes of the tree. In this study, the 18S rDNA of the Sphaerotheriida had a length of ca. 2000 bp, with the exception of a single species (*Sphaeromimus musicus* (deSaussure & Zehntner, 1897)) that had individual extension fragments of an additional 400 bp. The Zephroniidae is the only family whose 18S gene could not be amplified so far.

Only two integrative taxonomy studies have been con-

ducted until now (01.2016) in the Sphaerotheriida, involving a species of *Sphaerobelum* Verhoeff, 1924 from Thailand (Wongthamwanich et al. 2012a) and the genus *Sphaeromimus* from Madagascar (Wesener et al. 2014). Genetic distances between the few sampled Sphaerotheriida species are usually 8–20%, rarely lower in recently specified sister-taxa (4%), while intraspecific distances vary (0–3.5%).

Aside from single gene studies, one mitochondrial genome has been sequenced (Dong et al. 2012). While the authors determined the species to be a member of the Sphaerotheriidae and no voucher was deposited, the origin of the sampled specimen from China is an indicator that it might represent a member of the Zephroniidae. Indeed, a comparison of the COI fragment shows a great similarity to *Prionobelum* Verhoeff, 1924, the only giant pill-millipede genus recorded so far from China (unpublished data).

A single Sphaerotheriida transcriptome has been sequenced for a study focusing on hemocyanins of the Myriapoda (Pick et al. 2014). The analysed species was from the genus *Arthrosphaera* Pocock, 1895.

**Fossil record:** The Sphaerotheriida probably date back to at least the Upper Carboniferous, where fossil records of the related order Amynilspedida are common from North America (Hannibal & Feldman 1981) and central Europe (Fritsch 1901a, 1901b). Insufficiently conserved fossils first placed in the order Sphaerotheriida are also known from the Upper Carboniferous (Hannibal & Feldman 1981), but probably also represent Amynilspedida (Racheboeuf et al. 2004). Fossil specimens that can be unambiguously placed in the order Sphaerotheriida are unknown. Additionally, probably because of their large body size, no Sphaerotheriida are known from amber (Shear & Edgecombe 2010).

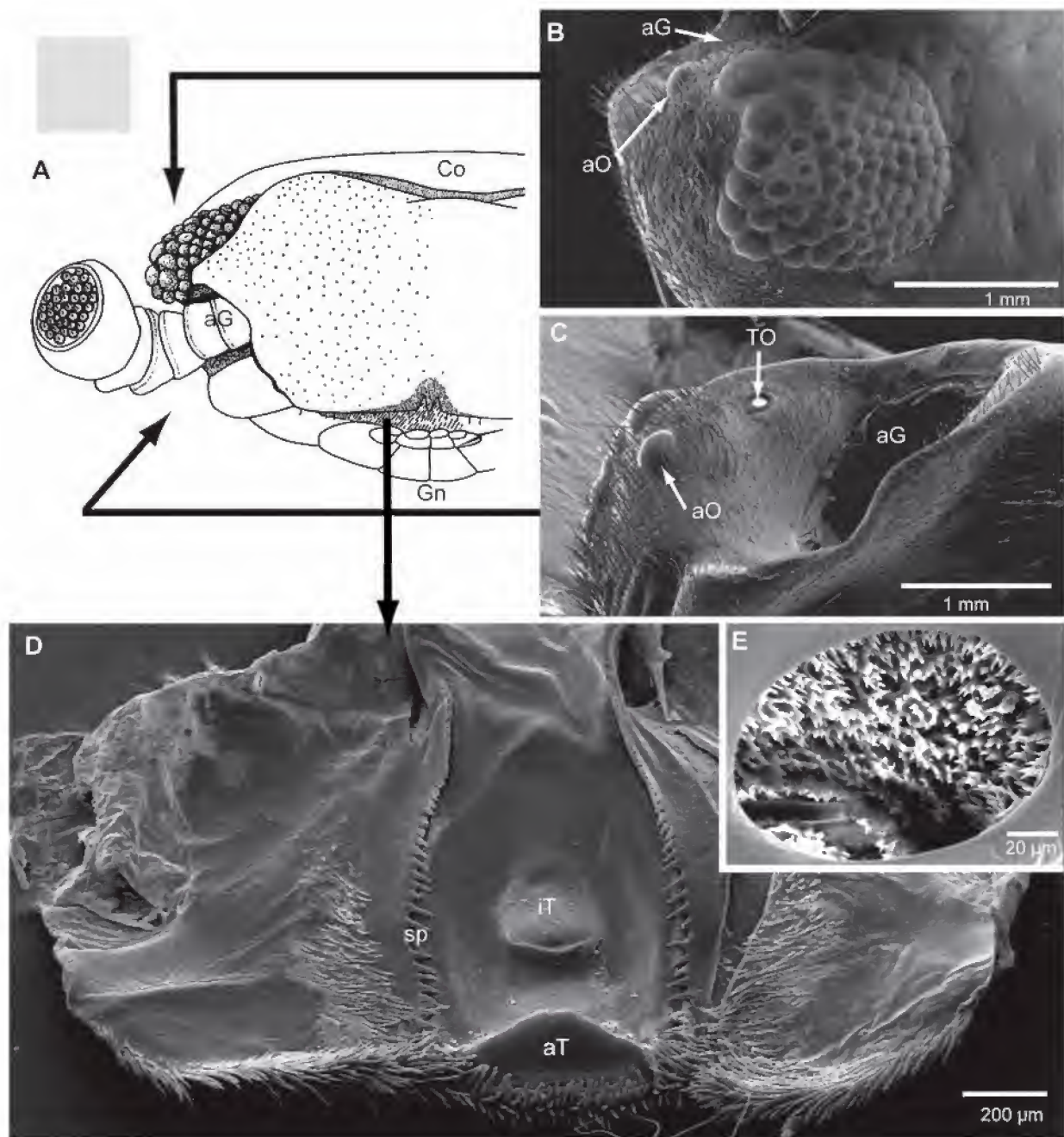
## MATERIAL & METHODS

**Cataloguing.** The information about species and genera presented here is mainly derived from existing faunistic lists (Asia: Jeekel 2001, South Africa: VandenSpiegel et al. 2002, Australia: Mesibov 2014) and the references provided therein. For each reference, only the first page (or rarely the first figure) in which the species name is mentioned is listed. Users of this list are advised to check the particular reference of interest for further name-uses. As the literature on Sphaerotheriida is of limited diversity, only the author and year are given after each specific record; the complete reference can be found in the “References” section. Records are annotated with ‘list’, ‘description’, ‘new locality’, etc. The information about the types (number, sex) is mainly taken from the first description or, more rarely, catalogues published more recently. The provided locality data is often restricted to the data provided in the first description; and many Sphaerotheriida species are still only known from their type locality. The repositories come either from the first description or from type catalogues of natural history collections, both published and unpublished.

At the familial and generic level, all substantive works that can be connected to the family or genus are listed (e.g., publications mentioning a representative of the South African family Sphaerotheriidae from China, where only members of the family Zephroniidae occur, are not listed under the Sphaerotheriidae). At the species level, it was attempted to list all articles that mention the species name. However, for some older publications dealing with the Indian genus *Arthrosphaera*, species determinations seem to be dubious, so such articles were dropped.

## ACRONYMS

AM	Australian Museum, Sydney, Australia.
AMNH	American Museum of Natural History, New York, U.S.A.
CAS	California Academy of Sciences, San Francisco, California, U.S.A.
CUMZ	Museum of Zoology, Chulalongkorn University, Bangkok, Thailand
FMNH	Field Museum, Chicago, Illinois, U.S.A.
HNMB	Hungarian National Museum, Budapest, Hungary
IEPN	Istituto di Entomologia Generale et Agraria in Portici, Napoli, Italy
IRSN	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, U.S.A.
MHNG	Muséum d’histoire naturelle de la Ville de Genève, Geneva, Switzerland
MNHN	Muséum national d’Histoire naturelle, Paris, France
MRAC	Royal Africa Museum Tervuren, Belgium
MTD	Museum für Tierkunde, Dresden, Germany
MZLU	Lund Universitets Zoologiska Museum, Lund, Sweden
MZUF	Museo Zoologico “La Specola”, Università di Firenze, Italy
NHML	Natural History Museum, London, England
NHMW	Naturhistorisches Museum Wien, Vienna, Austria
NHRM	Naturhistoriska Riksmuseet, Stockholm, Sweden
NMSA	Natal Museum, Pietermaritzburg, South Africa
SAM	South Australian Museum, Adelaide, Australia
SAMC	South African Museum, Cape Town, South Africa
SMF	Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt, Germany
SMNG	Senckenberg Museum für Naturkunde Görlitz, Görlitz, Germany
SMNH	Swedish Museum of Natural History, Stockholm, Sweden
WAM	Western Australian Museum, Perth, Australia
ZFMK	Zoologisches Forschungsmuseum A. Koenig, Bonn, Germany
ZISP	Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
ZMA	Zoological Museum, University of Amsterdam, Amsterdam, The Netherlands
ZMB	Zoologisches Museum Berlin, Berlin, Germany
ZMUC	Zoological Museum, University of Copenhagen, Copenhagen, Denmark

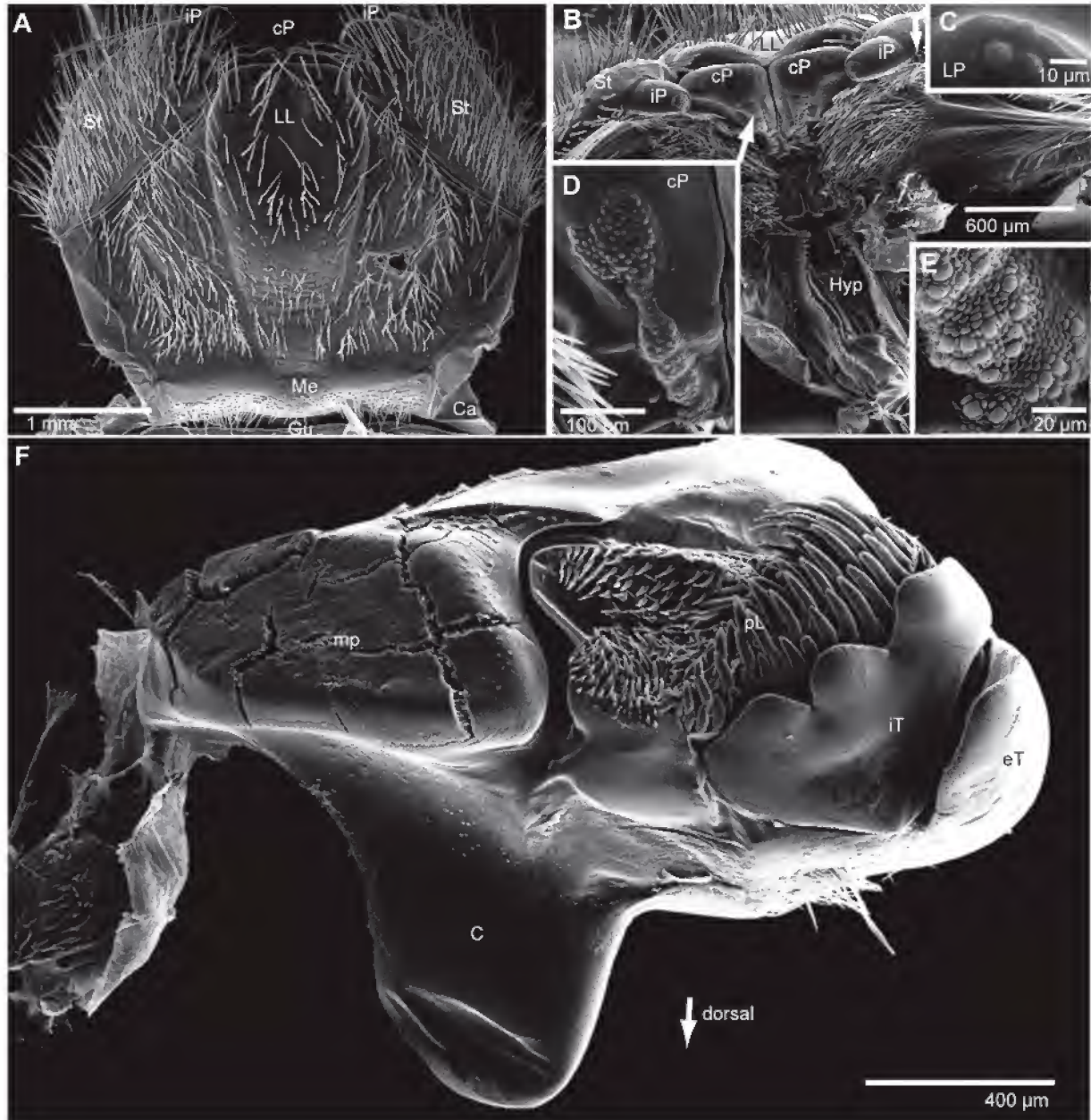


**Fig. 3.** Head of the Sphaerotheriida. A = *Prionobelum* sp., B–E = *Zoosphaerium* sp. A: Frontal view (modified after Mauriès 2001); B: ocelli; C: antennal groove with organ of Tömösváry and aberrant ocellus (antennae removed); D: Epipharynx, frontal view; E: detail of organ of Tömösváry. **Abbreviations:** aG = antennal groove; aO = aberrant ocellus; aT = anterior tooth of epipharynx; Co = collum (tergite 1); Gn = gnathochilarium; iT = internal tooth of epipharynx; sp = row of spines; TO = organ of Tömösváry.

ZMUH Zoological Museum, University of Hamburg,  
Hamburg, Germany  
ZMUM Zoological Museum,  
Moscow State University, Moscow, Russia

ZSM Zoologische Staatssammlung,  
Munich, Germany





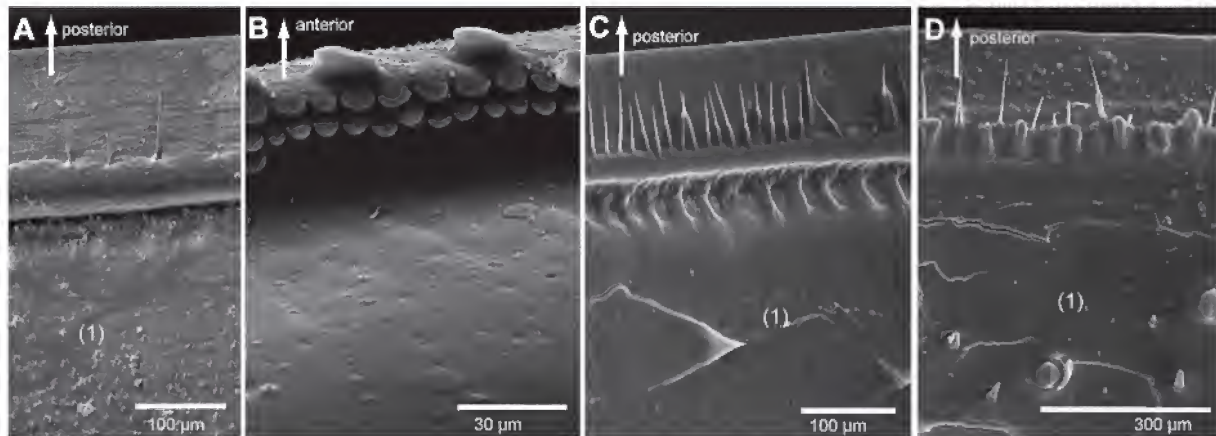
**Fig. 4.** Gnathochilarium and mandible, SEM, *Zoosphaerium* sp. **A:** gnathochilarium ventral view; **B:** gnathochilarium apical view of dorsal side; **C:** sensory cones of rudimentary lateral palpus; **D:** central located pads with 'pillows' of sensory cones; **E:** sensory cones on 'pillow', detail; **F:** right mandible, mesal view. **Abbreviations:** C = condylus; Ca = cardines; cP = central pads (modified central palpi); eT = external tooth; Gu = gula; Hyp = hypopharyngeal area of gnathochilarium; iP = inner palpus; iT = internal combed tooth; LL = lamellae linguales; LP = rudimentary lateral palpus; Me = mentum; mp = molar plate; pL = pectinate lamellae; St = stipites.

## RESULTS

### Characters of the order Sphaerotheriida

*Characters identifying the Sphaerotheriida as a member of the basal diplopod subclass Pentazonia (with orders Glomerida and Glomeridesmida)*

- (1) Head capsule lacking a 'Nackenphragma' (plesiomorphy)
- (2) Labrum fused to clypeus (apomorphy, joined with Helminthomorpha)
- (3) Labrum with single, triangular, anteriomedian tooth (apomorphy)



**Fig. 5.** Tergite surface (B) and posterior margin of tergite underside (=endotergum, A, C&D). **A:** *Procyliosoma* sp. (Procyliosomatidae); **B:** anterior margin, *Cryxus ovalis* (Zephroniidae); **C:** *Cryxus ovalis* (Zephroniidae); **D:** *Sphaerotherium similare* (Sphaerotheriidae). **Abbreviation:** (1) = inner area.

- (4) Epipharynx loosely attached to head capsule (plesiomorphy)
- (5) Mandible consisting of single basal joint plus gnathal lobe (plesiomorphy)
- (6) Gnathal lobe with anterior condylus, allowing an additional articulation (apomorphy, or myriapod plesiomorphy)
- (7) Gnathochilarium with fused lamellae linguales (apomorphy)
- (8) Body with  $\leq 21$  tergites,  $\leq 36$  pairs of legs
- (9) Tergites and pleurites free (plesiomorphy)
- (10) Stigmatic plates 'divided' or not fused (plesiomorphy?)
- (11) Sternites completely reduced or at least rudimentary at midbody segments (apomorphy)
- (12) Spiracles present on body segments 1 and 2 (plesiomorphy)
- (13) Tracheae dichotomous (apomorphy?)
- (14) Intestine curved, N-shaped (apomorphy)
- (15) Last male leg pair modified into telopods, consisting of pincer-shaped, three- or four-jointed structures formed by the telopodites, and inner horns formed by the fused syncoxite (apomorphy)
- (16) First larvae hatching with three pairs of legs (plesiomorphy)

#### Unique characters of the order Sphaerotheriida

- 1: Body consisting of 12 tergites plus anal shield, 11 pleurites, 21 stigmatic plates and 21 (females) or 23 (males) pair of legs. A 13th tergite is completely fused with the anal shield, in a few species a suture is still visible.
- 2: Head lacking genae, wide and short, laterally with large antennal grooves (Fig. 3A).
- 3: Head tentorium lacking a transverse bar despite the presence of an incisura lateralis (Koch 2015).

- 4: Each ocellarium with 60–90 ocelli arranged in a large cluster, always with a single ocellus located laterally in antennal groove (Figs 3B, C).
- 5: Organ of Tömösváry a small, round, circular pit, slightly smaller than an ocellus, located laterally in antennal groove (Figs 3C, E).
- 6: Antennae placed on head laterally inside large lateral antennal grooves (Fig. 3A).
- 7: Antennae short to very short, each consisting of six, usually cylindrical segments plus disc (Fig. 3A).
- 8: Disc usually carrying four, but species in many genera with 15–80 (Fig. 3A), rarely up to 186 (own observation in *Sphaeropoeus hercules* Brandt, 1833), apical cones.
- 9: Antennomeres 1, rarely 5 and 6, with few isolated sensilla basiconica (Wesener 2009).
- 10: Epipharynx massive, always with a larger anterior tooth, a large inner tooth and a fringe of spines (Fig. 3D)
- 11: Gnathochilarium with a normal-sized gula (Fig. 4A).
- 12: Gnathochilarium cardines almost completely reduced (Fig. 4A).
- 13: Gnathochilarium mentum fused to undivided lamellae linguales forming a large central plate (Fig. 3A).
- 14: Gnathochilarium stipites large, located laterally to lamellae linguales (Fig. 4A).
- 15: Gnathochilarium stipites with inner palpi only (Fig. 4B), lateral palpi rudimentary, reduced to a cluster of 4–6 tiny sensory cones (Fig. 4C).
- 16: Median palpi on hypopharynx transformed into centrally located pads (Fig. 4B), lacking any sensory cones in apical half, posterior half of underside with a unique pad of sensory cones (Figs 4D, E).
- 17: Maxillary nephridia opening on the endochilarium, not on the suture between stipes and lamellae linguales (Verhoeff 1928, Koch 2015).
- 18: Mandible gnathal lobe massive, with a single external tooth, a 3-combed (rarely 2-combed) inner tooth, 6



- or more pectinate lamellae and a prominently developed molar plate with an apical groove, always lacking a membranous fringe (Fig. 4F).
- 19: Mandible dorsal condylus prominent and strongly developed (Fig. 4F).
- 20: Defence glands absent.
- 21: Underside of posterior margin of tergites ('endotergum') often with special structures to prevent intrusion of dirt and/or parasites between tergites while not conglobated (Figs 5A, C, D). Opposite part of endotergum formed by surface of anterior margin of following tergite (Fig. 5B).
- 22: Largest tracheae of any diplopod, originating in a large, sclerotized tracheal pouch with three unusual muscle attachments of unclear function (Verhoeff 1928).
- 23: Legs consisting of six podomeres (coxa, prefemur, femur, postfemur, tibia, tarsus), long and massive, the largest of any diplopod, knife-shaped, strongly compressed laterally (Wesener 2009, 2014a).
- 24: Femur on posterior side always with a ridge (cleaning function?).
- 25: Tarsi always with an apical claw and at least one spine, always lacking a paronychium.
- 26: Tarsi 1 and 2 always lacking an apical spine.
- 27: Coxal pores absent.
- 28: Male leg-pairs 22 and 23 modified into anterior and posterior telopods, respectively (Wesener & VandenSpiegel 2009).
- 29: Both pairs of telopods with fused coxae (= syncoxite).
- 30: Anterior telopod with 3 or 4 podomeres distal to syncoxite, with one or several processes forming chelae or (more often) pincers (Wesener & VandenSpiegel 2009).
- 31: Posterior telopods forming chelae, with 3 podomeres distal to syncoxite, telopoditomere 3 sometimes divided (Figs 6A–L, 7A–L).
- 32: Telopoditomere 2 of posterior telopods always with a large process forming the immovable finger of chelae, while telopoditomere 3, sometimes divided, forms the movable finger (Figs 6A–L, 7A–L).
- 33: Syncoxite always with inner lobes and sharp-edged inner horns (Figs 7A, C–F).
- 34: Male and female gonopore opening on posterior side of coxa 2.
- 35: Male gonopore usually covered with a simple plate (Wesener & VandenSpiegel 2009).
- 36: Female gonopore with a vulva consisting of two sclerotized basal plates ('bursa') and one sclerotized apical plate (operculum), the latter often protruding above the coxa (Figs 8A–I).
- 37: Adult conglobation behaviour (=volvation). All Sphaerotheriida species are capable of rolling into a complete ball, with all legs, head with antennae, and first tergite being inside (Fig. 8). All adult Sphaerotheriida show the same modifications to roll into a ball (unlike

the pill millipedes of the order Glomerida, where several different mechanisms occur, e.g. Oeyen & Wesener 2015). First tergite is dwarfed (=collum), second tergite is enlarged (thoracic shield), featuring large grooves laterally that can encompass the tips of following tergites. Tergites 3–12 feature a depressed anterior margin that can accommodate parts of preceding tergites. In many species, the underside of the tergite tips and inner side of the anal shield carry a sclerotized ridge that interacts with a marginal brim present on thoracic shield, keeping volvated animals passively rolled-up.

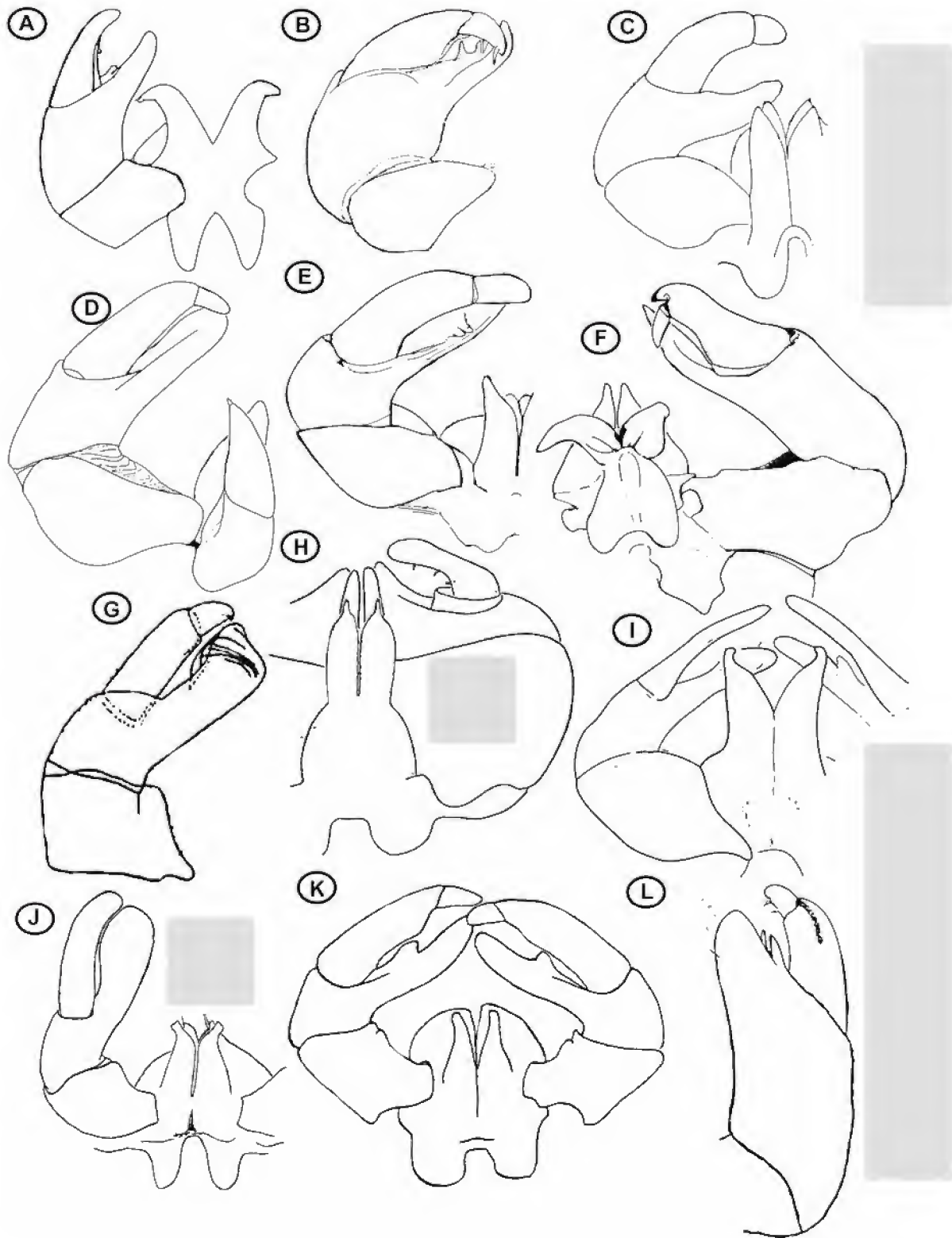
38: Larval conglobation behaviour. Larval giant pill-millipedes, which do not yet possess the adult number of tergites and leg pairs yet, have morphological adaptations to volvation different from those in specimens with the complete number of tergites. In larval specimens, the second tergite does not possess a large lateral groove, but a gap or schisma which encompasses the tergite tips. Potentially, a juvenile animal would otherwise be too short to form a closed ball, as it does not possess the full number of tergites required to close the conglobated ball. Additionally, in larvae the apical part of the head, including the eyes, is often not covered by the anal shield. Unfortunately, Sphaerotheriida larvae without the full number of tergites are rarely observed (Dohle 1992; Wesener, pers. obs.), which hinders a more intricate study of their behaviour and development.

39: Spermatozoon with layer of unique palisade vesicles (Jamieson 1997).

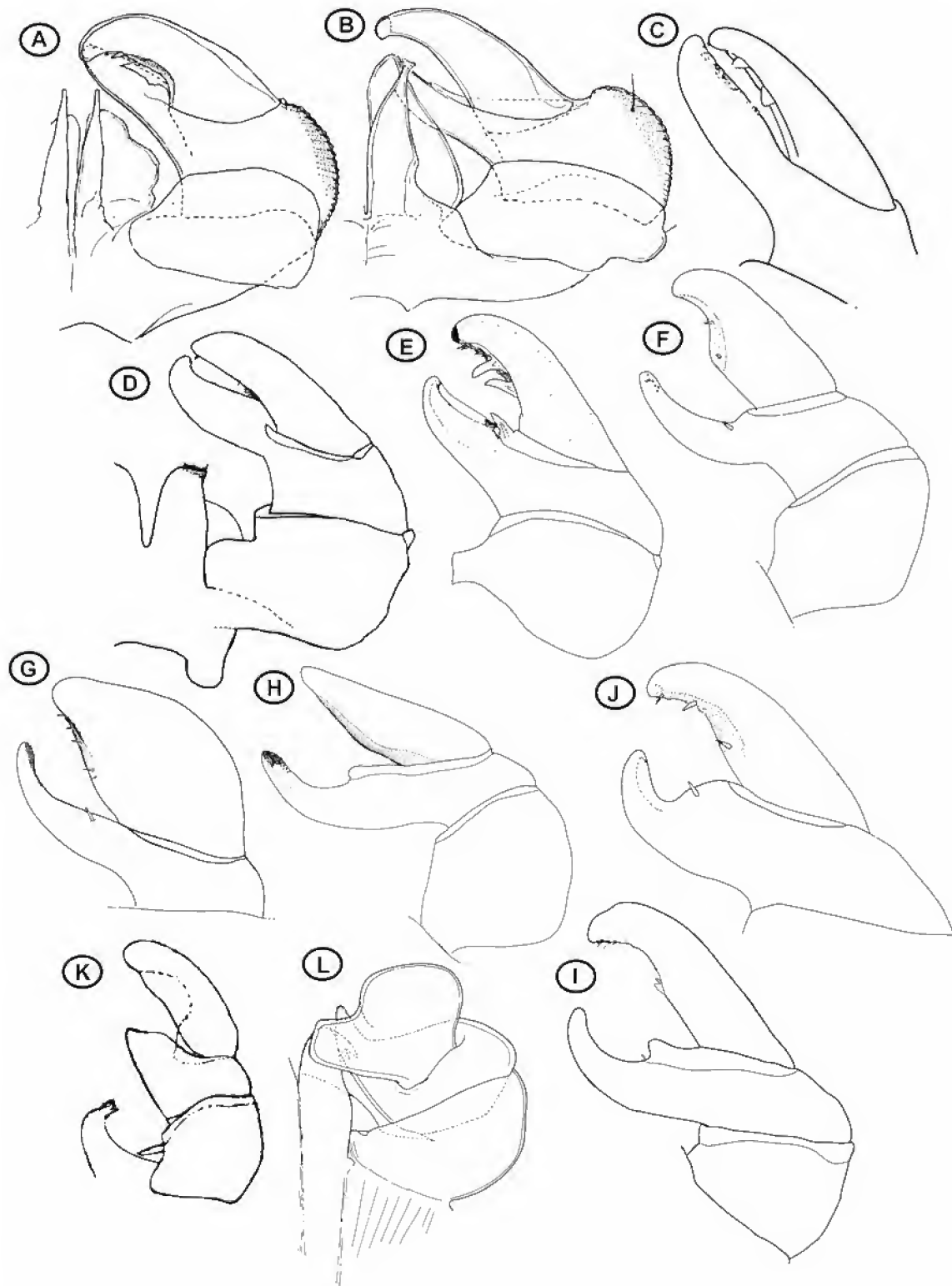
#### Taxonomic characters inside the order Sphaerotheriida

Generally, all species of the order look very similar: all 351 possess the same basic structure of the mouthparts and head, all have the same mode of rolling-up, and all possess the same number of tergites, pleurites, stigma-carrying plates, and leg pairs. With the exception of *Bothrobolum* (whose tergites have depressions or grooves), all genera and families of giant pill-millipedes look identical to one another when rolled-up (Fig. 9). The few aberrant forms with strongly modified mandibular and leg joints include the monotypic genera *Leptotelopus* and *Lep-toprotopus*. Future studies will show whether these modifications are species-level apomorphies or merely individual variations.

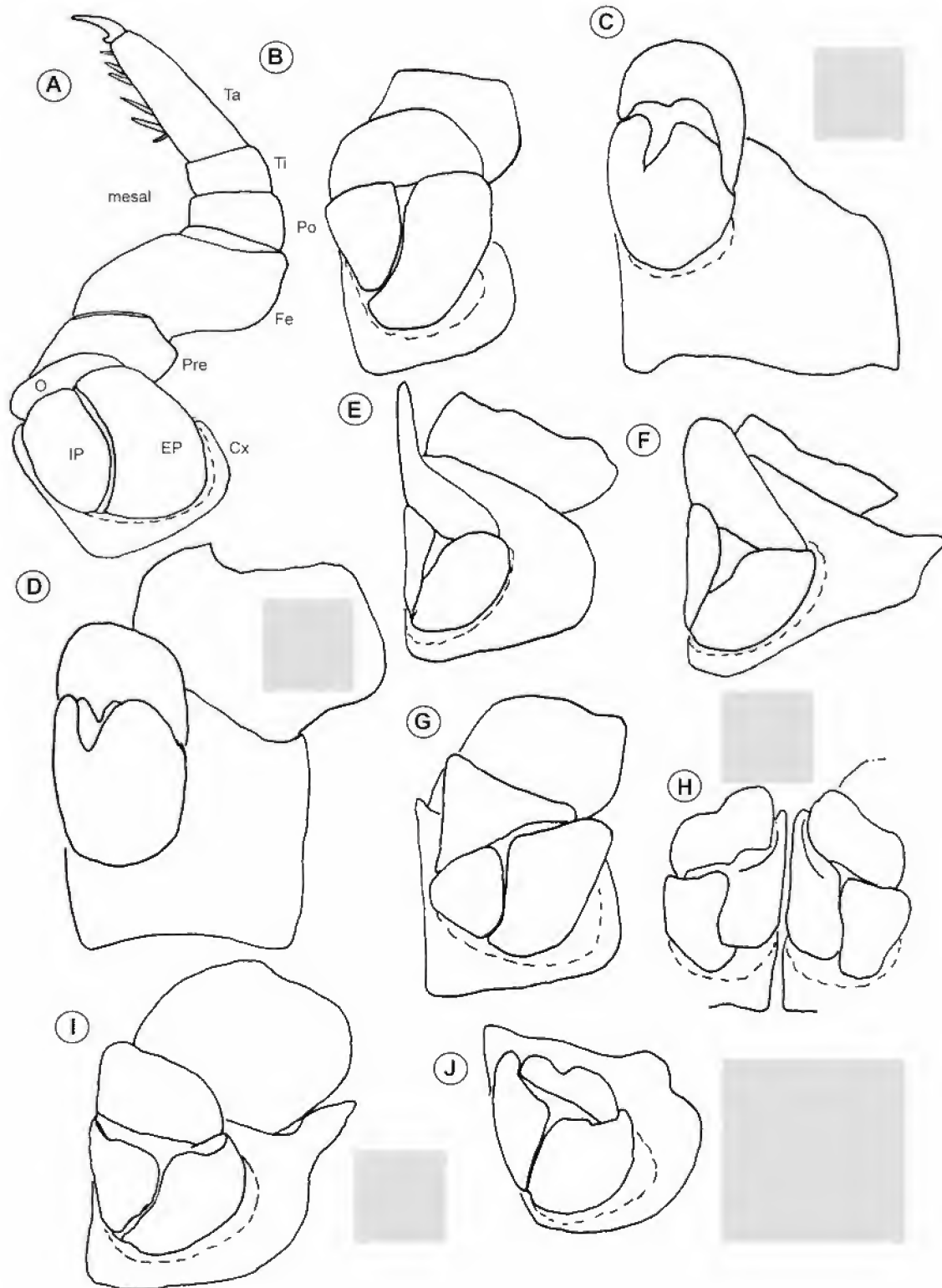
Regarding the size, gigantic species reaching the length of 95 mm or a diameter of 50–60 mm exist on Madagascar. The largest species in other areas of distribution reach the maximum size comparable to a ping-pong ball (Fig. 9). The smallest species are the size of a pea, while the average size reached by the majority of species in all families and genera is in between a pea and a ping-pong ball (Fig. 9). The only exception, again from Madagascar, is *Microsphaerotherium*, whose species are considerably



**Fig. 6.** Posterior telopods I: Families Procyliosomatidae and Zephroniidae. **A:** *Procyliosoma* sp. (after Holloway 1956); **B:** *Zephronia ovalis* (after Golovatch et al. 2012); **C:** *Kophosphaera* sp. (after Attems 1936); **D:** *Prionobelum* sp. (after Mauriès 2001); **E:** *Tigridosphaera* sp. (after Jeekel 1951); **F:** *Cryxus ovalis* (after Golovatch et al. 2012); **G:** *Sphaerobelum clavigerum* (after Verhoeff 1924); **H:** *Rajasphaera montana* (after Attems 1935); **I:** *Sechelliosoma forcipatum* (after Mauriès 1980); **J:** *Castanotherium pellitum* (after Attems 1932); **K:** *Sphaeropoeus lugubris* (after Attems 1932); **L:** *Indosphaera feae* (after Attems 1936).

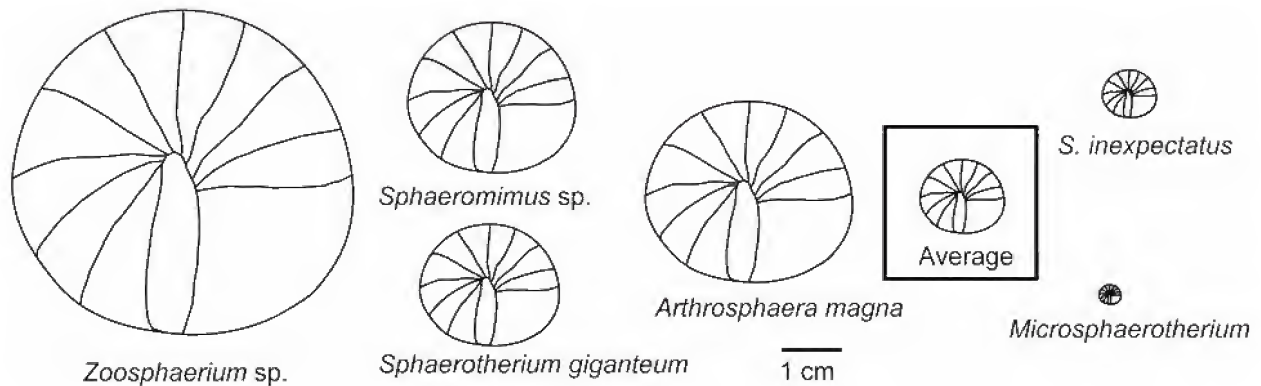


**Fig. 7.** Posterior telopods II: Families Sphaerotheriidae, Arthrosphaeridae, Cyliosomatidae. **A:** *Sphaerotherium weberii* (after Schubart 1958); **B:** *Sphaerotherium steppense* (after Schubart 1958); **C:** *Arthrosphaera magna* (after Attems 1936); **D:** *Sphaeromimus musicus* (after Wesener & Sierwald 2005b); **E:** *Zoosphaerium priapus* (after Wesener & Wägele 2008); **F:** *Zoosphaerium voeltzkowianum* (after Wesener & Wägele 2008); **G:** *Zoosphaerium pseudoplatylabum* (after Wesener 2009); **H:** *Zoosphaerium neptunus* (after Wesener & Wägele 2008); **I:** *Zoosphaerium piligerum* (after Wesener & Wägele 2008); **J:** *Zoosphaerium blandum* (after Wesener & Wägele 2008); **K:** *Cyliosoma* sp. (after Silvestri 1917); **L:** *Cynotelopus notabilis* (after Jeekel 1986).

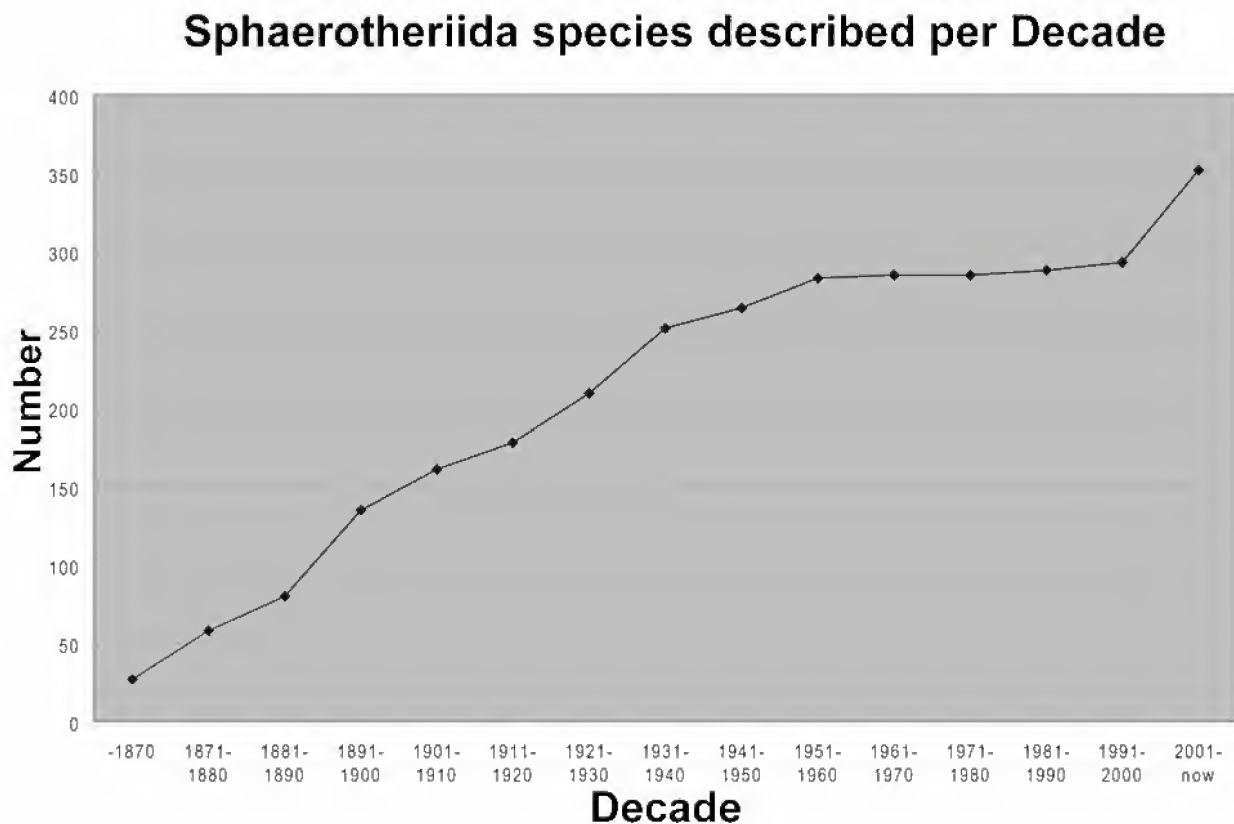


**Fig. 8.** Vulvae of different Sphaerotheriida species and genera. A: *Procyliosoma* sp., second leg pair with vulva (after Holloway 1956); B: *Procyliosoma* sp. (after Holloway 1956); C: *Zephronia clivicola* (after Attems 1936); D: *Zephronia hirta* (after Attems 1936); E: *Sphaerotherium hansstroeni* (after Schubart 1958); F: *Sphaerotherium perbrincki* (after Schubart 1958); G: *Cyliosoma angulatum* (after Wesener 2014); H: *Arthrosphaera magna* (after Attems 1936); I: *Sphaeromimus musicus* (after Wesener & Sierwald 2005b); J: *Zoosphaerium arborealis* (after Wesener & Sierwald 2005a). **Abbreviations:** Cx = coxa; Fe = femur; EP = lateral plate; IP = inner, mesal plate; O = operculum; Po = postfemur; Pre = prefemur; Ta = tarsus; Ti = tibia.





**Fig. 9.** Size variation in giant pill-millipedes, showing the extremes of their sizes. Largest known specimen, as well as largest measured species from Madagascar (except *Zoosphaerium*), South Africa and India. Average size of a Sphaerotheriida species, average smallest size of species inside the different genera (giving *Sphaeromimus inexpectatus* as a reference), as well as smallest known species. All specimens rolled-up.



**Fig. 10.** Species of giant pill-millipedes (order Sphaerotheriida) described per decade.

smaller and represent true dwarf forms of Sphaerotheriida (Wesener & VandenSpiegel 2007). Body size is a difficult taxonomic character, as species show subsequent growth after reaching sexual maturity (Enghoff et al.

1993). Furthermore, in several species the largest males are considerably smaller than the largest females (e.g., *Zoosphaerium neptunus*, see Wesener & Wägele 2008; Wesener & Schütte 2010).



The most important taxonomic characters at the family, genus and species level are the endotergum (Figs 5A–D), the male anterior and posterior telopods (Figs 6A–L, 7A–L), and the female vulva, especially the operculum (Figs 8A–I). The posterior telopods, which are, unlike the gonopods of other millipede groups, not directly involved in sperm transfer (Haacker 1969), are not always species- or even genus-specific (Figs 6A–L, 7A–L). The anterior telopods are more variable than the posterior ones, and are often species-specific. Other characters of taxonomic importance at the species level are: setation of tergites; number of sensory cones on the antenna; spination on legs; length/width ratio of tarsus and femur; shape of first stigma-carrying plate; number, position and length of locking carinae on the anal shield.

### Diversity of the order

The order Sphaerotheriida contains five families, one of which is monogeneric (Fig. 1, Table 1). All but five (which are *nomina dubia*) of the 351 valid giant pill-millipede species are assigned to 24 genera. Six of the genera are monotypic, while an additional three genera contain two species. These nine species-poor genera are counterbalanced by six quite species-rich genera containing 20 or more species which are: *Zoosphaerium* (65 species), *Sphaerotherium* (54), *Castanotherium* (50), *Arthrosphaera* (40), *Zephronia* (38) and *Sphaeropoeus* (20). While it is entirely possible that currently existing species-rich genera will be split or lumped together, the discovery of truly new genera based on newly discovered species would be surprising; the last, *Microsphaerotherium*, dates back to 2007 (Wesener & VandenSpiegel 2007).

Almost no new species of Sphaerotheriida were described after the Second World War (1945) until recently (Fig. 10). Several of the older descriptions, especially the numerous ones published before 1900 (Fig. 10), are often not suitable for species identification and require cumbersome revisions of type material. Only after such revisions had recently been undertaken and the taxonomic characters of the order were worked-out (VandenSpiegel et al. 2002; Wesener & Sierwald 2005a, Wesener & Wägele 2008), was it finally possible to describe new species. Species from India, South Africa, Australia and parts of Asia are still hard to determine because of the lack of crucial revisions.

Nevertheless, my own observations of museum collections suggest that many more species await their discovery. On Madagascar, several species are microendemic, restricted to a single hill or forest fragment (Wesener 2009); it remains unknown if this microendemism is common just on Madagascar or also in other distribution areas of the Sphaerotheriida. On Madagascar more than 20 species of the genus *Zoosphaerium* are still awaiting description,

with only females currently represented in natural history collections (Wesener 2006). While revisions of the species-rich genera in the families Sphaerotheriidae and Zephroniidae might lead to the discovery of several synonymies of widespread species, this will probably be more than balanced by new discoveries. For example, no Sphaerotheriida species is currently known from Laos (Likhitrakarn et al. 2014), only one is known from Cambodia (Likhitrakarn et al. 2015) and only two are known from Thailand (Wongthamwanich et al. 2012a). Neighbouring Vietnam (Enghoff et al. 2004) harbours at least 11 species in four genera.

As genetic distances between isolated populations of the same species, at least on Madagascar, are reasonably high in mitochondrial genes (2–5% COI, 2–4% 16S, see Wesener et al. 2010b; Wesener et al. 2014), potentially cryptic species might greatly increase the currently known and estimated giant pill-millipede species diversity.

## CATALOGUE

### Order SPHAEROTHERIIDA Brandt, 1833

Name adapted from: Sphaerotheria Brandt, 1833: 198.  
Sphaerotherien C.L. Koch, 1847: 36; Sphaerotheriens Humbert, 1865: 37; Sphaerotheria Latzel 1884: 125; Sphaerotheriens de Saussure & Zehntner 1902: 2; Sphaerotheridae Carl, 1906: 228; Carl 1912: 104; Sphaerotheria Attems, 1914: 139; Attems 1926: 117; Sphaerotheriida Jeekel, 1971: 23; Hoffman 1980: 62; Jeekel 2001: 1; Shelley et al. 2000: 12; Wesener & VandenSpiegel 2009: 545; Wesener et al. 2010b: 1184; Wesener et al. 2011: 967; Wesener 2014a: 199  
—— Zephroniidae Gray, 1843: 546; Zephronioidea Cook 1895: 2; Silvestri 1897c: 645  
—— Chorzocerata Verhoeff, 1910: 20; Verhoeff 1924: 40; Verhoeff 1928: 1377

**Diagnosis:** See above.

#### Included families (5)

Procyliosomatidae Wesener & Van den Spiegel, 2009  
Zephroniidae Gray, 1843  
Arthrosphaeridae Jeekel, 1974  
Sphaerotheriidae Brandt, 1833  
Cylisosomatidae Jeekel, 1974

**Distribution:** Australia & New Zealand, South Africa, Madagascar, Seychelles, Southern India & Sri Lanka, SE Asia from E. Nepal to the Philippines, SE China to Sulawesi and Java (Fig. 2).



**Fig. 11.** Photographs of living Sphaerotheriida, families Procyliosomatidae and Zephroniidae. **A:** *Procyliosoma tasmanicum* Silvestri, 1917; **B:** *Castanotherium* sp., walking; **C:** *Castanotherium* sp., volvated; **D:** *Zephronia dawydoffi* Attems, 1953, walking; **E:** *Zephronia siamensis* Hirst, 1907; **F:** *Zephronia* sp., from Thailand; **G:** two different *Zephronia* species from Thailand; **H:** *Zephronia* sp., from Thailand. Fig. A (c) R. Mesibov; B–D (c) J.-P. Oeyen; G (c) P. Kautt.





**Fig. 12.** Photographs of living Sphaerotheriida, family Sphaerotheriidae & Arthrosphaeridae. **A:** *Sphaerotherium giganteum* Porat, 1872; **B:** *Sphaerotherium* sp.; **C:** *Sphaerotherium* sp.; **D–G:** Different *Arthrosphaera* spp. Figs A–C (c) M. Hamer; D–G Shyamal Lakshminarayanan via WikimediaCommons.





**Fig. 13.** Photographs of living Sphaerotheriida, family Arthrosphaeridae, genera *Arthrosphaera* Pocock, 1895 and *Sphaeromimus* de Saussure & Zehntner, 1902. **A:** three rolled-up *Arthrosphaera brandti* (Humbert, 1865); **B:** *Sphaeromimus musicus* (de Saussure & Zehntner, 1897); **C:** *Sphaeromimus splendidus* Wesener & Sierwald, 2005; **D:** *Sphaeromimus inexpectatus* Wesener & Sierwald, 2005; **E:** the critically endangered *Sphaeromimus lavasoa* Wesener, 2014; **F:** *Sphaeromimus andohahela* Wesener, 2014. Fig. A (c) J.-P. Oeyen.





**Fig. 14.** Photographs of living Sphaerotheriida, family Arthrosphaeridae, genera *Sphaeromimus* de Saussure & Zehntner, 1902 and *Zoosphaerium* Pocock, 1895. **A:** *Zoosphaerium haackeri* Wesener, 2009; **B:** *Zoosphaerium* sp.; **C:** *Zoosphaerium* sp.; **D:** *Zoosphaerium* sp.; **E:** *Zoosphaerium* sp.; **F:** *Zoosphaerium* sp.; **G:** left *Z. alluaudi* (de Saussure & Zehntner, 1902), right *Z. pseudoblandum* Wesener, 2009; **H:** numerous *Z. blandum* (de Saussure & Zehntner, 1897) with a single, shiny *Sphaeromimus musicus* (de Saussure & Zehntner, 1897). Fig. B (c) J.-P. Oeyen; C–F (c) A. Hartig.





**Fig. 15.** Photographs of living or freshly conserved Sphaerotheriida, family Cyliosomatidae, genera *Cyliosoma* and *Cynotelopus* Jeekel, 1986. **A:** *Cyliosoma sarahae* (Moir & Harvey, 2008); **B:** *C. sarahae* (left) and *Cynotelopus notabilis* Jeekel, 1986 (right). (c) M. Moir.

#### Key to the families of the order Sphaerotheriida

1. – Anterior telopods modified into pair of chela. Inner horns of posterior telopods wide, tips curved laterally (Fig. 6A). Vulval operculum well-rounded, positioned on lower plane than inner and lateral plates (Fig. 8A). Stigmatic plates free, no spine-like process protruding above stigma opening of previous plate. Legs without a coxal process. Tergite 13 incompletely fused with anal shield, laterally a large gap still visible. Endotergum with neither callosities, nor spines, nor hair; marginal bristles not arranged in rows (Fig. 5A). Small cuticular scales visible between marginal bristles and posterior margin of endotergum. Monogeneric, 10 species. Eastern Australia and New Zealand.  
..... **Family Procyliosomatidae**
- Anterior telopods modified into pair of clamps. Inner horns of posterior telopods with parallel tips. Vulval operculum positioned on same level as inner and lateral plates (which can be fused). Stigmatic plates either almost fully covered by pleurites, or stigma opening of previous plate protected by a spine-like process. Tergite 13 completely fused with anal shield, laterally only a weak suture sometimes visible. Endotergum marginal bristles arranged in rows. No cuticular scales between marginal bristles and posterior margin of endotergum. .... **2**
2. – Inner (mesal) and lateral plates of vulva fused (Figs 8B, C). Vulval operculum well-rounded, base surrounding apical margin of basal plate (Fig. 8B). Stigmatic plates almost fully covered by pleurites, stigma opening protected by coxal process. Inner area of endotergum lacking spines, setae rarely present (Fig. 5C). All antennomeres oval, not cylindrical. 144 species in 15 genera. SE Asia and the Seychelles.  
..... **Family Zephroniidae**
- Vulva always with separate inner and lateral plates. Base of operculum surrounded by basal plates. Stigmatic plates free, stigma opening protected by spine-like process of following plate. Endotergum inner area with large, triangular spines and setae. Antennomeres cylindrical, or well-rounded. Australia, eastern South Africa, Madagascar, southern India. .... **3**
3. – Anterior telopods without sclerotized knobs. Inner horns of posterior telopods very slender (Figs 7A, B). Posterior telopod with stridulation organ consisting of field with numerous sclerotized ridges on the second podomere. Male gonopore covered by an undivided plate and apically with a second, sclerotized plate. Vulval operculum mesally elongated (Figs 8D, E). Endotergum often with special callosities (Fig. 5D). All antennomeres cylindrical. Sensorial cones on palpi of gnathochilarium arranged in several clusters. 56 species in two genera. Eastern South Africa. Introduced populations in Zimbabwe, Malawi and possibly Mauritius. .... **Family Sphaerotheriidae**
- Anterior telopods with sclerotized knobs present on process of second, as well as last podomere. Inner horns of posterior telopods wide. Posterior telopod without stridulation organ. Male gonopore covered only by an undivided plate. Vulval operculum often elongated, but then centrally, not laterally. Endotergum never with callosities. Antennomeres cylindrical or well-rounded. Sensorial cones on palpi of gnathochilarium arranged in single clusters. .... **4**
4. – First podomere of anterior telopod with harp carrying 1–6 stridulation ribs. Inner horns of posterior telopod with single tip. Fixed finger of posterior telopod conically shaped, never strongly triangular. Podomere 3 not massive and strongly curved. Vulval operculum broadly rounded (Fig. 8H), or with apical notch (Fig. 8I). Inner plate of vulva strongly protruding (except

- in *Sphaeromimus*). Female subanal plate enlarged to washboard carrying 1–10 stridulation ribs on each side. Male anal shield never with sclerotized special notch. Antennomeres oval or cylindrical. 109 species in four genera. Madagascar, S. India and Sri Lanka. Introduced population in the Usambara Mountains, Tanzania. .... **Family Arthrosphaeridae**
- First podomere of anterior telopod greatly enlarged and covered with tiny spines. Inner horns of posterior telopod with double tip. Fixed finger of posterior telopod basally wide, apically strongly tapering, strongly triangular and often much shorter than podomere 3 (Fig. 7K). Podomere 3 massive and strongly curved (Fig. 7K). Vulval operculum elongated into single tip, shaped like isosceles triangle (Fig. 8F). Inner plate of vulva not protruding (Fig. 8F). Female subanal plate small, without ribs. Male anal shield always with sclerotized special notch. Antennomeres cylindrical. 20 species in two genera. Coastal southwestern and eastern Australia. .... **Family Cyliosomatidae**

### **Procyliosomatidae** **Wesener & VandenSpiegel, 2009**

Procyliosomatidae Wesener & VandenSpiegel, 2009: 561 (first description); Wesener et al. 2010b: 1186 (molecular phylogenetic analysis); Wesener 2014a: 199 (morphological phylogenetic analysis).

**Type genus:** *Procyliosoma* Silvestri, 1917

**Monogeneric**

**10 species.**

### **Family *Procyliosoma* Silvestri, 1917**

*Procyliosoma* Silvestri, 1917: 75 (first description); Attems 1926: 120 (key); Attems 1928: 203 (key); Verhoeff 1932: 1379 (key); Holloway 1956: 432 (revision of New Zealand species); Jeekel 1971: 27 (list); Jeekel 1974: 45 (list); Hoffman 1980: 63 (list); Jeekel 1986: 36 (list); Shelley et al. 2000: 12 (list); Mesibov 2000: 16 (comment); Wesener & VandenSpiegel 2009: 561 (morphological phylogenetic analysis, type genus of Procyliosomatidae); Wesener et al. 2010b: 1184 (molecular phylogenetic analysis); Wesener 2014a: 199 (morphological phylogenetic analysis).

#### **Synonyms**

---- *Cyliosomella* Verhoeff 1924: 43 (first description, in comparison with *Cyliosoma*), synonymized with *Procyliosoma* by Jeekel 1986: 38. Attems 1926: 120 (list);

Verhoeff 1928: 84 (discussion, comparison with *Cyliosoma*); Verhoeff 1932: 1382 (list); Jeekel 1971: 24 (list); Jeekel 1974: 45 (list); Hoffman 1980: 63 (list); Jeekel 1986: 38 (synonymized with *Procyliosoma*); Shelley et al. 2000: 12 (list).

**Type species:** *Cyliosomella castaneum* Verhoeff, 1924, by monotypy

---- *Syncyliosoma* Silvestri, 1917: 85 (introduced as subgenus of *Procyliosoma* in key), synonymized with *Procyliosoma* by Jeekel 1986: 38. Jeekel 1971: 29 (list); Jeekel 1974: 45 (raised to genus in Sphaerotheriida revision); Hoffman 1980: 63 (list); Jeekel 1986: 38 (synonymized with *Procyliosoma*); Shelley et al. 2000: 12 (list).

**Type species:** *Procyliosoma* (*Syncyliosoma*) *aurivilli* Silvestri, 1917, by original designation

**Type species.** *Procyliosoma leae* Silvestri, 1917, by original designation.

**Description:** Anterior telopods modified into pair of chela. Inner horns of posterior telopods wide, tips curved laterally (Fig. 6A). Vulval operculum well-rounded, positioned on lower plane than inner and lateral plates (Fig. 8A). Stigmatic plates free, no spine-like process protruding above stigma opening of previous plate. Legs without a coxal process. Tergite 13 incompletely fused with anal shield, laterally a large gap still visible. Endotergum with neither callosities, nor spines, nor hair; marginal bristles not arranged in rows (Fig. 5A). Small cuticular scales visible between marginal bristles and posterior margin of endotergum.

**Distribution:** Australia (NSW, Qld, Tas); New Zealand (NZ).

#### **Included species and subspecies (12)**

*Procyliosoma andersoni* (Verhoeff, 1928) [NSW]  
*Procyliosoma aurivilli* Silvestri, 1917 [Qld]  
*Procyliosoma castaneum* (Verhoeff, 1924) [Qld]  
*Procyliosoma delacyi delacyi* (White, 1859) [NZ]  
*Procyliosoma delacyi striolatum* (Pocock, 1895) [NZ]  
*Procyliosoma dorrigenae* (Verhoeff, 1928) [NSW]  
*Procyliosoma leae* Silvestri, 1917 [Tas]  
*Procyliosoma leiosomum* (Hutton, 1877) [NZ]  
*Procyliosoma tasmanicum* Silvestri, 1917 [Tas]  
*Procyliosoma tuberculatum tuberculatum* (Silvestri, 1917) [NZ]  
*Procyliosoma tuberculatum westlandicum* Holloway, 1956 [NZ]  
*Procyliosoma walesianum* (Karsch, 1881) [NSW]

***Procyliosoma andersoni*** (Verhoeff, 1928)  
*Cyliosomella andersoni* Verhoeff, 1928: 85 (first descrip.)



*Cyliosomella andersoni*:-- Jeekel 1981: 26 (list)  
*Procyliosoma andersoni*:-- Jeekel 1986: 39 (list, new combination).

Types: M and F syntypes.  
 Locality: Upper Richmond River.  
 Deposited: AM, KS76521.

***Procyliosoma aurivillii*** Silvestri, 1917  
*Procyliosoma (Syncyliosoma) Aurivillii* Silvestri, 1917: 76 (first description)  
*Procyliosoma (Syncyliosoma) aurivilli*:-- Chamberlin 1920: 89 (list)  
*Procyliosoma aurivillii*:-- Jeekel 1971: 29 (as type of *Syncyliosoma*)  
*Procyliosoma aurivillii*:-- Jeekel 1974: 24 (list)  
*Procyliosoma aurivillii*:-- Jeekel 1986: 36 (list).

Types: F holotype or syntypes.  
 Locality: Cape York, Queensland.  
 Deposited: NHRM (Silvestri 1917: 85).

***Procyliosoma castaneum*** (Verhoeff, 1924)  
*Cyliosomella castaneum* Verhoeff, 1924: 48 (first description)  
*Cyliosomella castaneum*:-- Verhoeff 1928: 85 (redescription)  
*Cyliosomella castaneum*:-- Jeekel 1971: 24 (list)  
*Cyliosoma castanea*:-- Jeekel 1981: 24 (list)  
*Procyliosoma castaneum*:-- Jeekel 1986: 36 (list, new combination).

Types: M holotype.  
 Locality: Herberton, Queensland.  
 Deposited: NHRM?

***Procyliosoma delacyi delacyi*** (White, 1859)  
*Zephronia (Sphaerotherium) De Lacyi* White, 1859: 406 (first description)  
*Sphaerotherium de lacyi*:-- Butler 1873: 177 (list)  
*Sphaerotherium De Lacyi*:-- Preudhomme de Borre 1884: 26 (list)  
*Cyliosoma de lacyi*:-- Pocock 1895: 415 (new comb.)  
*Cyliosoma Delacyi*:-- Attems 1914: 64 (list)  
*Procyliosoma delacyi delacyi*:-- Holloway 1956: 435 (new combination, redescription)  
*Procyliosoma delacyi delacyi*:-- Shields 2008: 33 (feeding)  
 ---- *Sphaerotherium novae-zealandidae* Kirk, 1885: 139, synonymized by Holloway 1956: 441  
*Procyliosoma Novae-zealandiae*:-- Silvestri 1917: 84 (redescription).

Types: *P. delacyi* 1 F, *S. novae-zealandidae* unknown  
 Locality: *P. delacyi*: New Zealand (Holloway 1956: 42).  
 Deposited: *P. delacyi* NHML (Holloway 1956: 42), *Sphaerotherium novae-zealandidae* specimens NHML?

***Procyliosoma delacyi striolatum*** (Pocock, 1895)  
*Cyliosoma striolatum* Pocock, 1895: 414 (first description)  
*Cyliosoma striolatum*:-- Attems 1914: 64 (list)  
*Procyliosoma striolatum*:-- Silvestri 1917: 62 (new combination)  
*Procyliosoma Delacyi*:-- Silvestri 1917: 82 (redescription) **NOT** White, 1859  
*Procyliosoma delacyi striolatum*:-- Holloway 1956: 442 (effectively listing *P. striolatum* as a subspecies under *P. delacyi*).

Types: F holotype.  
 Locality: Greymouth, South Island, New Zealand (Pocock, 1895: 415)  
 Deposited: *P. striolatum*, NHML 1889.11.6.1 (Holloway 1956: 443, no longer present? J. Beccaloni, pers. comm.).

***Procyliosoma dorrigense*** (Verhoeff, 1928)  
*Cyliosomella andersoni dorrigense* Verhoeff, 1928: 86 (first description)  
*Cyliosomella andersoni dorrigense*:-- Jeekel 1981: 26 (list)  
*Procyliosoma dorrigense*:-- Jeekel 1986: 39 (list; raised to species, new combination).

Types: M holotype.  
 Locality: North Dorrigo, NSW.  
 Deposited: AM.

***Procyliosoma leae*** Silvestri, 1917  
*Procyliosoma (Procyliosoma) Leae* Silvestri, 1917: 75 (designated type of *Procyliosoma*, first description)  
*Procyliosoma leae*:-- Chamberlin 1920: 89 (list)  
*Procyliosoma leae*:-- Jeekel 1971: 27 (list)  
*Procyliosoma leae*:-- Jeekel 1981: 27 (list)  
*Procyliosoma leae*:-- Jeekel 1986: 36 (list)  
*Procyliosoma leae*:-- Mesibov 2000: 16 (list)  
*Procyliosoma leae*:-- Wesener & VandenSpiegel 2009: 558 (morphological phylogenetic analysis)  
*Procyliosoma leae*:-- Wesener et al. 2010b: 1189 (molecular phylogenetic analysis)  
*Procyliosoma leae*:-- Wesener 2014a: 203 (morphological phylogenetic analysis).

Types: M and F syntypes.  
 Locality: Hobart, Tasmania  
 Deposited: IEPN?



***Procyliosoma leiosomum*** (Hutton, 1877)

*Sphaerotherium leiosomum* Hutton, 1877: 116 (first description)

*Sphaerotherium leiosomus*:-- Hutton 1878: 291 (description)

*Sphaerotherium leiosomum* [sic]:-- Preudhomme de Borre 1884: 27 (list)

*Cyliosoma liosoma* [sic]:-- Pocock 1895: 415 (list, new combination)

*Cyliosoma leiosomum*:-- Attems 1914: 64 (list)

*Procyliosoma leiosoma*:-- Silvestri 1917: 79 (redescrip.)

*Procyliosoma leiosomum*:-- Holloway 1956: 435 (redescription).

Types: M and F syntypes.

Locality: Dunedin, New Zealand.

Deposited: Otago Museum, not labelled as types (Holloway 1956: 435), NHML, types or Pocock's specimens.

***Procyliosoma tasmanicum*** Silvestri, 1917

(Fig. 11A)

*Procyliosoma (Procyliosoma) tasmanicum* Silvestri, 1917: 76 (first description)

*Procyliosoma tasmanicum*:-- Chamberlin 1920: 89 (list)

*Procyliosoma tasmanicum*:-- Jeekel 1981: 27 (list)

*Procyliosoma tasmanicum*:-- Jeekel 1986: 39 (list)

*Procyliosoma tasmanicum*:-- Mesibov 2000: 16 (list).

Types: M and F syntypes.

Locality: Hobart, Tasmania.

Deposited: IEPN?

***Procyliosoma tuberculatum tuberculatum*** Silvestri, 1917

*Procyliosoma tuberculatum* Silvestri, 1917: 80 (first description)

*Procyliosoma tuberculatum tuberculatum*:-- Holloway 1956: 436 (redescription, designation of subspecies)

*Procyliosoma tuberculatum tuberculatum*:-- Clark 1978: 1 (parasitic Nematoda)

*Procyliosoma tuberculatum*:-- Rossi & Weir 1998: 282 (Funghi)

*Procyliosoma tuberculata* [sic]:-- Clair 2011: 75 (rat predation).

Types: M and F syntypes.

Locality: Cape Maria van Diemen, New Zealand.

Deposited: IEPN?

***Procyliosoma tuberculatum westlandicum*** Holloway, 1956

*Procyliosoma tuberculatum westlandicum* Holloway, 1956: 439 (first description).

Types: 1 F holotype, 1 M, 3F paratypes.

Locality: Buller Creek, Punakaiki, Westland, New Zealand (Holloway 1956: 439)

Deposited: Canterbury Museum, holotype (Myr. 70, Myr 70-1, Myr 70-2), allotype (Myr 1, Myr 1-1, Myr 1-2), 2 F paratypes (Myr 5, Myr 5-1, Myr 71, Myr 71-1, Myr 71-2), Dominion Museum, 1 F paratype (8/203, 9/218) (Holloway 1956: 439).

***Procyliosoma walesianum*** (Karsch, 1881)

*Sphaerotherium walesianum* Karsch, 1881: 31 (first description)

*Sphaerotherium walesianum*:-- Preudhomme de Borre 1884: 28 (list)

*Sphaerotherium walesianum*:-- Pocock 1893: 130 (synonymized with *S. angulatum*; Jeekel (1986: 36) believes this was based on misidentification)

*Sphaerotherium walesianum*:-- Attems 1914: 141 (list)

*Sphaerotherium walesianum*:-- Silvestri 1917: 62 (list, '=*Cyliosoma walesianum*'; new combination)

*Cyliosoma walesianum*:-- Jeekel 1981: 26 (list)

*Procyliosoma walesianum*:-- Jeekel 1985: 39 (list; new combination)

Types: M holotype.

Locality: Sydney, NSW.

Deposited: ZMB 370.

**Family Zephroniidae Gray, 1843**

Zephroniidae Gray, 1843: 546; Zephroniidae Pocock, 1894: 326 (raised to family); Jeekel 1971: 29; Jeekel 2001: 12; Wesener & VandenSpiegel 2009: 551 (morphological phylogenetic analysis); Wesener et al. 2010: 1188 (molecular phylogenetic analysis); Golovatch et al. 2012: 273; Wesener 2014a: 199 (morphological phylogenetic analysis).

---- Sphaeropoeidae Brölemann, 1913: 79; Attems 1914: 142; Jeekel 1971: 28; Jeekel 1974: 46; Hoffman 1976: 118; Hoffman 1980: 63; Shelley et al. 2000: 12; Mauriès 2001: 140; Wesener & Sierwald 2005b.

Remark: This group was previously known under the name Sphaeropoeidae. With the inclusion of the genus *Zephronia* in the family, and a redescription of the latter (Golovatch et al. 2012), the name Zephroniidae takes priority. Previously, all Asian genera were included in the family, later *Arthrosphaera* was split-off (Jeekel 1974). The Australian genus *Cynotelopus* was accidentally placed in the family later (Shelley et al. 2000).

**Genera included (15)**

*Bothrobelum* Verhoeff, 1924 (Borneo)  
*Cryxus* Leach, 1814 ('Indochina')  
*Indosphaera* Attems, 1935 (NE India, S. Burma)  
*Kophosphaera* Attems, 1935 (NE India, Nepal)  
*Leptotelopus* Silvestri, 1897 (Burma)  
*Zephronia* Gray, 1832 (NE India, Nepal, Burma, Cambodia, Malaysia, Thailand)  
*Sphaerobelum* Verhoeff, 1924 (Thailand, Vietnam)  
*Prionobelum* Verhoeff, 1924 (Vietnam, China)  
*Leptoprotopus* Silvestri, 1897 (Sumatra)  
*Sphaeropoeus* Brandt, 1833 (Malaysia, Vietnam, Sumatra, Borneo, Java)  
*Tigridosphaera* Jeekel, 2000 (Malaysia)  
*Castanotherium* Pocock, 1895 (Halmahera, Butung, Borneo, Java, Sumatra, Sulawesi, Philippines)  
*Castanotheroides* Chamberlin, 1921 (Borneo, Philippines)  
*Sechelliosoma* Mauriès, 1980 (Seychelles)  
*Rajasphaera* Attems, 1935 (Borneo)

**Type genus:** *Zephronia* Gray, 1832

143 species + 1 nomina dubia.

**Remarks:** Here treated differently than the other families; subfamilial categories after Jeekel (2001) are kept in this list of the family Zephroniidae. However, such groupings have not been tested yet by a phylogenetic analysis and are arbitrary at best.

**Subfamily Zephroniinae Gray, 1832**

Name adapted from Zephroniidae Gray, 1843: 546; Jeekel 2001: 12

---- Sphaeropoeinae; Jeekel, 1974: 46; Hoffman 1976: 118; Hoffman 1980: 63; Mauriès 2001: 140

**Tribe Zephroniini Jeekel, 2001**

*Zephroniini* Jeekel, 2001: 13 name adapted from Zephroniidae Gray, 1843: 546

---- *Indosphaerini* Hoffman, 1976: 119; Hoffman 1980: 63  
 ---- *Prionobelini* Hoffman, 1976: 119; Hoffman 1980: 63  
 ---- *Sphaeropoeini* Mauriès, 2001: 140

**Bothrobelum Verhoeff, 1924**

Verhoeff, 1924: 58 (first description); Attems 1926: 120 (list); Attems 1928: 203 (list); Jeekel 1971: 23 (list); Jeekel 1974: 46 (classification); Hoffman 1976: 120 (list); Hoffman 1980: 64 (list); Jeekel 2001: 13 (list); Wesener & VandenSpiegel 2009: 551 (list).

**Description:** Tergites sulcate, with a U-shaped depression and six oval pits on each side, a unique character for the order.

**Type-species:** *Bothrobelum rugosum* Verhoeff, 1924.

**Species included (2)**

*Bothrobelum rugosum* Verhoeff, 1924  
*Bothrobelum sulcatulum* (Butler, 1872) **n. comb.**

*Bothrobelum rugosum* Verhoeff, 1924  
*Bothrobelum rugosum* Verhoeff, 1924: 67 (first descrip.)  
*Bothrobelum rugosum*:-- Jeekel 2001: 13 (list).

Types: F holotype.

Habitat: Indonesia: Kalimantan, Landak.

Deposited: Unknown.

*Bothrobelum sulcatulum* (Butler, 1872) new combination  
*Zephronia sulcatula* Butler, 1872: 357 (first description)  
*Zephronia sulcatula*:-- Preudhomme de Borre 1884: 25 (list)  
*Sphaeropoeus sulcatulus*:-- Silvestri 1896a: 20 (list)  
*Zephronia sulcatula* Attems:-- 1914: 147 (list)  
*Zephronia sulcatula*:-- Jeekel 2001: 21 (list).

**Remarks:** R. L. Hoffman wrote in October 2011 'I looked at a number of old dry types in the British Museum, and noticed the odd looking one named *Zephronia sulcatula* Butler. A pencil note made at the time says "Each tergum with median u-shaped depression and 6 large oval pits on each side."' According to this letter, the species is placed in the genus *Bothrobelum*.

Types: Holotype of unknown sex.

Habitat: "Borneo", Sarawak.

Deposited: NHML (online catalogue)

**Cryxus Leach, 1814**

*Cryxus* Leach, 1814: 407; Jeekel 1971: 24 (list); Jeekel 2001: 14 (list); Wesener & VandenSpiegel 2009: 551 (list); Golovatch et al. 2012: 277 (redescription)

**Description:** Anterior telopods with three podomeres distal to syncoxite, telopoditomere 3 heavily bent posteriorly, forming a 'beak' with the process of telopoditomere 2. Posterior telopod, telopoditomere 2 strongly elongated, longer than telopoditomeres 3 and 4 combined. Telopoditomere 4 almost rudimentary, with a 90% torsion so that it overlaps the immovable finger. Tarsus slender, with a single apical spine. Small-bodied, only up to 20 mm long.





*nia*. Antennomere 6 strongly flattened. Legs slender, with a single apical spine. Anal shield with single black locking carina, in some species reduced. 30–45 mm long. Tergites glabrous. Might fall into synonymy under *Zephronia*.

**Type-species:** *Kophosphaera politissima* Attems, 1935.

### Species included (7)

*Kophosphaera brevilamina* Attems, 1936 (NE India)  
*Kophosphaera devolvens* Attems, 1936 (NE India)  
*Kophosphaera excavata* (Butler, 1874) (NE India, Nepal)  
*Kophosphaera mammifera* Attems, 1936 (NE India)  
*Kophosphaera martensi* Wesener, 2015 (Nepal)  
*Kophosphaera politissima* Attems, 1935 (NE India, Nepal)  
*Kophosphaera shivapuri* Wesener, 2015 (Nepal)

***Kophosphaera brevilamina*** Attems, 1936  
*Kophosphaera brevilamina* Attems, 1936: 191 (first description)  
*Kophosphaera brevilamina*:-- Rajulu 1970: 129 (list)  
*Kophosphaera brevilamina*:-- Jeekel 2001: 15 (list)  
*Kophosphaera brevilamina*:-- Sanyal et al. 2012: 865 (list)  
*Kophosphaera brevilamina*:-- Wesener 2015: 309 (key).

Types: 3 M? syntypes.

Habitat: India: Siliguri, North Bengal; Kurseong, Eastern Himalayas.

Deposited: NHMW 100/191 (Stagl & Schiller, in prep.).

***Kophosphaera devolvens*** Attems, 1936  
*Kophosphaera devolvens* Attems, 1936: 190 (first descrip.)  
*Kophosphaera devolvens*:-- Rajulu 1970: 129 (list)  
*Kophosphaera devolvens*:-- Jeekel 2001: 15 (list)  
*Kophosphaera devolvens*:-- Sanyal et al. 2012: 865 (list)  
*Kophosphaera devolvens*:-- Wesener 2015: 309 (key).

Types: 3 M? syntypes.

Habitat: India: Gangtok, Sikkim; Soreil, Darjeeling district; Darjeeling, Eastern Himalayas.

Deposited: NHMW 2222, 2223 (Stagl & Schiller, in prep.).

***Kophosphaera excavata*** (Butler, 1874)  
*Zephronia excavata* Butler, 1874: 185 (first description)  
*Zephronia excavata*:-- Preudhomme de Borre 1884: 24 (list)  
*Zephronia excavata*:-- Pocock 1899: 466 (description)  
*Zephronia excavata*:-- Attems 1914: 145 (list)  
*Kophosphaera excavata*:-- Attems 1936: 187 (new comb.)  
*Kophosphaera excavata*:-- Jeekel 2001: 15 (list)

*Kophosphaera excavata*:-- Wesener 2015: 309 (key, re-description).

Remarks: Attems redescription probably not identical with original (Jeekel 2001: 15).

Types: Lectotype, 3 syntypes (apparently lost).

Habitat: India: Sikkim (Type); Dikrang Valley, Darrang distr., Shillong, Khasi Hills, Assam; Nepal: Chitlong.

Deposited: NHML BM1874.51.

***Kophosphaera mammifera*** Attems, 1936  
*Kophosphaera excavata*, ssp. *mammifera* Attems, 1936: 188 (first description)  
*Kophosphaera excavata*, ssp. *mammifera*:-- Jeekel 2001: 16 (list)  
*Kophosphaera excavate* (sic!). *mammifera*:-- Sanyal et al. 2012: 865 (list)  
*Kophosphaera mammifera*:-- Wesener 2015: 311 (new status).

Types: 10 M and F syntypes.

Habitat: India: Sureil, Darjeeling distr.; Eastern Himalayas; Khasi Hills, Assam.

Deposited: NHMW 2221 (Stagl & Schiller, in prep.).

***Kophosphaera martensi*** Wesener, 2015  
*Kophosphaera martensi* Wesener, 2015: 316 (first description).

Types: Holotype

Habitat: Nepal: Kaski District, Dhampus.

Deposited: SMF.

***Kophosphaera politissima*** Attems, 1935  
*Kophosphaera politissima* Attems, 1935: 128 (first description)  
*Kophosphaera politissima*:-- Attems 1936: 180 (descrip.)  
*Kophosphaera politissima*:-- Rajulu 1970: 129 (list)  
*Kophosphaera politissima*:-- Jeekel 2001: 16 (list)  
*Kophosphaera politissima*:-- Sanyal et al. 2012: 865 (list)  
*Kophosphaera politissima*:-- Wesener 2015: 309 (re-description).

Types: 4 M and F syntypes.

Habitat: India: Dobie Jhora, Kurseong; Sureil, Darjeeling distr., Eastern Himalayas; Nepal.

Deposited: NHMW 2220 (Stagl & Schiller, in prep.).

***Kophosphaera shivapuri*** Wesener, 2015  
*Kophosphaera shivapuri* Wesener, 2015: 313 (first descr.).

Types: Holotype

Habitat: Nepal: Kathmandu District, Shivapuri Mountain.

Deposited: SMF.

### *Leptotelopus* Silvestri, 1897

*Leptotelopus* Silvestri, 1897c: 645 (first description); Jeekel 1971: 26 (list); Jeekel 1974: 46 (classification); Hoffman 1980: 63 (list); Jeekel 2001: 16 (list); Mauriès 2001: 141 (list); Wesener & VandenSpiegel 2009: 551 (list).

#### **Synonyms:**

---- *Lophozephronia* Attems, 1936: 152, synonymized by Jeekel 1971: 26. Attems, 1943: 61; Attems, 1953: 155; Jeekel, 1971: 26.

*Type species: Zephronia crepitans* Pocock, 1890.

**Description:** Male legs in posterior half uniquely modified, with enlarged coxa and prefemur, and greatly elongated, but very slender femur, postfemur, tibia and tarsus. Tarsus with fringes of hair at lateral and mesal margins. Anterior telopods with three podomeres distal to syncoxite. Telopoditomere 3 small, forming a clamp with a process of telopoditomere 2. Posterior telopods with four telopoditomeres. A large and ridged plate located on telopoditomere 4 might represent a unique stridulation organ. 15 mm long.

**Type-species:** *Zephronia crepitans* Pocock, 1890.

#### **Monotypic**

*Leptotelopus crepitans* (Pocock, 1890)

*Zephronia crepitans* Pocock, 1890b: 392 (first description)

*Leptotelopus crepitans*:-- Silvestri, 1897c: 645 (type of new genus)

*Zephronia crepitans*:-- Pocock 1899: 471 (list)

*Zephronia crepitans*:-- Attems 1914: 145 (list)

*Lophozephronia crepitans*:-- Attems, 1936: 183 (new combination)

*Lophozephronia crepitans*:-- Jeekel 2001: 16 (list)

*Leptotelopus crepitans*:-- Jeekel 2001: 16 (list)

*Leptotelopus crepitans*:-- Mauriès 2001: 141 (list).

Types: 5 M and F syntypes.

Habitat: Burma: Rangoon.

Deposited: NHML BM1889.12.20.13-16.

### *Zephronia* Gray, 1832

(Figs 11D–H)

*Zephronia* Gray, 1832: 796; Gervais 1837: 42; Newport 1844: 265; Gervais 1844: 61; Gervais 1847: 75; Butler 1873: 178; Pocock 1894: 326; Pocock 1895: 413; Silvestri 1896b: 205; Pocock 1899: 270; Flower 1901: 7; Attems 1914: 142; Attems 1926: 120; Attems 1935: 129; Attems 1936: 153; Attems 1943: 63; Attems 1953: 155; Jeekel 1971: 29 (list); Jeekel 1974: 46 (classification); Hoffman 1976: 120 (comments); Hoffman 1980: 64 (list); Jeekel 2001: 17 (list); Wesener & VandenSpiegel 2009: 551 (morphological phylogenetic analysis); Wesener et al. 2010: 1188 (molecular phylogenetic analysis); Golovatch et al. 2012: 283 (redescription); Peeters & De Greef 2015: 3 (predation by ants).

Keys: Pocock 1890; Pocock 1899; Attems 1936.

**Description:** Anterior telopods with four podomeres distal to syncoxite. Telopoditomere 2 with a large, curved process forming a clamp with simple telopoditomeres 3 and 4. Posterior telopod with four telopoditomeres. Immobile finger slender, curved apically, towards telopoditomeres 3 and 4 always with two membranous ledges. Telopoditomere 3 also with a membranous ledge and a row of large, crenulated, sclerotized teeth, much larger than telopoditomere 4. Telopoditomere 4 with sclerotized ledge and few sclerotized speines. Antennae flattened laterally, axe-shaped. 18–50 mm long. Tarsi often with several apical spines.

**Type-species.** *Zephronia ovalis* Gray, 1832.

#### **Species and sub-species included (39)**

*Zephronia alticola alticola* Attems, 1936 (NE India)

*Zephronia alticola bengalica* Attems, 1936 (NE India)

*Zephronia anthracina* Pocock, 1895 (Malaysia, Perak)

*Zephronia butleri* Olliff, 1882 (North Borneo)

*Zephronia clivicola* Pocock, 1890 (Burma)

*Zephronia comotti* Pocock, 1890 (Burma)

*Zephronia dawydoffi* Attems, 1953 (Cambodia)

*Zephronia debilis* Attems, 1936 (NE India)

*Zephronia densipora* Attems, 1936 (NE India)

*Zephronia disparipora* Attems, 1936 (NE India)

*Zephronia dollfusi* Pocock, 1895 (Vietnam)

*Zephronia doriae* Pocock, 1890 (Burma)

*Zephronia feae* Pocock, 1890 (Burma)

*Zephronia floweri* Hirst, 1907 (Singapore)

*Zephronia formosa* Pocock, 1890 (Burma)

*Zephronia gestri* Pocock, 1890 (Burma)

*Zephronia hirsti* Jeekel 2001 (Malaysia)

*Zephronia hirta* Attems, 1936 (NE India)

*Zephronia hysophila* Attems, 1936 (NE India)

*Zephronia impunctata* Pocock, 1895 (Malaysia)  
*Zephronia inferior* Attems, 1936 (Burma)  
*Zephronia juvenis* Attems, 1936 (NE India)  
*Zephronia lignivora* Attems, 1936 (NE India)  
*Zephronia maculatum* Butler, 1874 (NE India)  
*Zephronia manca* Attems, 1936 (Vietnam, NE India)  
*Zephronia montana* (Karsch, 1881) ('Himalaya')  
*Zephronia nepalensis* Wesener, 2015 (Nepal)  
*Zephronia nigrinota* Butler, 1872 (NE India)  
*Zephronia ovalis* Gray, 1832 (Vietnam)  
*Zephronia pellita* Attems, 1935 (Sumatra)  
*Zephronia profuga* Attems, 1936 (China, Hongkong)  
*Zephronia ridleyi* Hirst, 1907 (Malaysia)  
*Zephronia semilaevis* Pocock, 1890 (Burma)  
*Zephronia siamensis* Hirst, 1907 (Thailand)  
*Zephronia specularis* Attems, 1936 (NE India)  
*Zephronia tigrina* Butler, 1872 (NE India)  
*Zephronia tigrinoides* Attems, 1936 (NE India)  
*Zephronia tumida* Butler, 1882 (NE India, Burma)  
*Zephronia viridescens* Attems, 1936 (Burma)

Remark: The name *Zephronia* has been used to cover many generic concepts; its concept was not fixed until the redescription of the type species (Golovatch et al. 2012). However, a revision of numerous described species is necessary to evaluate whether or not they fall into the redefined genus.

***Zephronia alticola alticola*** Attems, 1936  
*Zephronia alticola* Attems, 1936: 176 (first description)  
*Zephronia alticola*:-- Rajulu 1970: 128 (list)  
*Zephronia alticola*:-- Jeekel 2001: 17 (list)  
*Zephronia alticola*:-- Sanyal et al. 2012: 865 (list).

Types: M and F syntypes.  
Habitat: India: Sureil, Darjeeling distr., Eastern Himalayas; Rotung, Assam.  
Deposited: NHMW 2235 (Stagl & Schiller, in prep.).

***Zephronia alticola bengalica*** Attems, 1936  
*Zephronia alticola*, ssp. *bengalica* Attems, 1936: 177 (first description)  
*Zephronia alticola*, ssp. *bengalica*:-- Jeekel 2001: 17 (list).

Types: M holotype.  
Habitat: India: Buxa Road, North Bengal.  
Deposited: NHMW 2236.

***Zephronia anthracina*** Pocock, 1895  
*Zephronia anthracina* Pocock, 1895: 413 (first descrip.)  
*Zephronia anthracina*:-- Hirst, 1907: 215 (list)  
*Zephronia anthracina*:-- Attems, 1914: 144 (list)

*Zephronia anthracina*:-- Wang 1967: 384 (list)  
*Zephronia anthracina*:-- Jeekel 2001: 18 (list).

Types: Holotype? of unknown sex.  
Habitat: Malaysia: Perak.  
Deposited: NHML (Online Database).

***Zephronia butleri*** Olliff, 1882  
*Zephronia Butleri* Olliff, 1882: 29 (first description)  
*Zephronia Butleri*:-- Preudhomme de Borre 1884: 23 (list)  
*Zephronia butleri*:-- Jeekel 2001: 18 (list).

Types: M and F syntypes.  
Habitat: North Borneo: Sandakan.  
Deposited: NHML (not listed as type, Online Database).

***Zephronia clivicola*** Pocock, 1890  
*Zephronia clivicola* Pocock, 1890b: 386 (first description)  
*Zephronia clivicola*:-- Pocock 1899: 469 (list)  
*Zephronia clivicola*:-- Attems 1914: 145 (list)  
*Zephronia clivicola*:-- Attems, 1936: 170 (new locality)  
*Zephronia clivicola*:-- Weidner 1960: 78 (list)  
*Zephronia clivicola*:-- Jeekel 2001: 18 (list).

Types: M and F syntypes.  
Habitat: Burma: Carin Cheba or Biapo (villages of Puepoli and MeLeleo); Second Defile, River Irrawaddy.  
Deposited: NHML (Online Database), 2 paratypes ZMUH (Weidner 1960: 78).

***Zephronia comotti*** Pocock, 1890  
*Zephronia comotti* Pocock, 1890b: 391 (first description)  
*Zephronia comotti*:-- Pocock 1899: 471 (list)  
*Zephronia comotti*:-- Attems 1914: 145 (list)  
*Zephronia comotti*:-- Attems 1936: 182 (list)  
*Zephronia comotti*:-- Jeekel 2001: 18 (list).

Types: M holotype?  
Habitat: Burma: Minhla.  
Deposited: NHML?

***Zephronia dawydoffi*** Attems, 1953  
(Fig. 11D)  
*Zephronia dawydoffi* Attems, 1953: 156 (first description)  
*Zephronia cambodjana* [sic!]:-- Attems 1953: pl. 3 (error)  
*Zephronia dawydoffi*:-- Jeekel 2001: 18 (list)  
*Zephronia dawydoffi*:-- Likhitrakarn et al. 2015: 177 (list).

Remark: In the captions of the illustrations the name of the new species is *Zephronia cambodjana*, an obvious clerical error (Jeekel 2001).



Types: Syntypes.

Habitat: Cambodia: Ream, Sre Umbell; Kampot, Kampong Speu.

Deposited: NHMW 2241 (Stagl & Schiller, in prep.).

***Zephronia debilis*** Attems, 1936

*Zephronia debilis* Attems, 1936: 172 (first description)

*Zephronia debilis*:-- Rajulu 1970: 127 (list)

*Zephronia debilis*:-- Jeekel 2001: 18 (list)

*Zephronia debilis*:-- Sanyal et al. 2012: 865 (list).

Types: F holotype.

Habitat: India: Darjeeling; Eastern Himalayas.

Deposited: NHMW 3956 (Stagl & Schiller, in prep.).

***Zephronia densipora*** Attems, 1936

*Zephronia densipora* Attems, 1936: 171 (first description)

*Zephronia densipora*:-- Rajulu 1970: 127 (list)

*Zephronia densipora*:-- Jeekel 2001: 18 (list).

Types: M holotype.

Habitat: India: Elephant Falls, Shillong; Khasi Hills, Assam.

Deposited: NHMW 2237 (Stagl & Schiller, in prep.).

***Zephronia disparipora*** Attems, 1936

*Zephronia disparipora* Attems, 1936: 171 (first description)

*Zephronia disparipora*:-- Rajulu 1970: 127 (list)

*Zephronia disparipora*:-- Jeekel 2001: 18 (list).

Types: M holotype without telopods.

Habitat: India: Kobo, Assam.

Deposited: Indian Museum Calcutta? (now Zoological Survey of India, Kolkata).

***Zephronia dollfusi*** Pocock, 1895

*Zephronia dollfusi* Pocock, 1895: 413 (first description)

*Zephronia dollfusi*:-- Attems 1914: 145 (list)

*Zephronia dollfusi*:-- Attems 1936: 182 (list)

*'Zephronia' dollfusi*:-- Golovatch 1983 (list)

*Zephronia dollfusi*:-- Jeekel 2001: 18 (list)

*Zephronia dollfusi*:-- Enghoff et al. 2004: 32 (list).

Types: Holotype of unknown sex.

Habitat: Vietnam: Cochinchina.

Deposited: NHML.

***Zephronia doriae*** Pocock, 1890

*Zephronia doriae* Pocock, 1890a: 79 (first description)

*Zephronia doriae*:-- Pocock 1890b: 385 (list)

*Zephronia doriae*:-- Pocock 1899: 469 (list)

*Zephronia doriae*:-- Attems 1914: 145 (list)

*Zephronia doriae*:-- Attems 1936: 182 (list)

*Zephronia doriae*:-- Jeekel 2001: 18 (list).

Types: M and F syntypes.

Habitat: Burma: Kachin Hills, East of Bhamo.

Deposited: NHML (Online Catalogue).

***Zephronia feae*** Pocock, 1890

*Zephronia feae* Pocock, 1890a: 80 (first description)

*Zephronia feae*:-- Pocock 1890b: 385 (new locality)

*Zephronia feae*:-- Pocock 1899: 469 (list)

*Zephronia feae*:-- Attems 1914: 145 (list)

*Zephronia feae*:-- Attems 1936: 182 (list)

*Zephronia feae*:-- Weidner 1960: 78 (list)

*Zephronia feae*:-- Jeekel 2001: 18 (list).

Types: M and F syntypes.

Habitat: Burma: Teinzo, Moolay River (Type); Kachin Cauri, East of Bhamo.

Deposited: NHML (Online Catalogue), 5 paratypes ZMUH (Weidner 1960: 78).

***Zephronia floweri*** Hirst, 1907

*Zephronia floweri* Hirst, 1907: 217 (first description)

*Zephronia floweri*:-- Attems 1914: 145 (list)

*Zephronia floweri*:-- Jeekel 2001: 19 (list)

*Zephronia floweri*:-- Decker 2013: 3 (list).

Type: Two F syntypes.

Habitat: Singapore.

Deposited: NHML (Online Cat., author listed as Pocock).

***Zephronia formosa*** Pocock, 1890

*Zephronia formosa* Pocock, 1890b: 387 (first description)

*Zephronia formosa*:-- Pocock 1899: 470 (description)

*Zephronia formosa*:-- Attems 1914: 145 (list)

*Zephronia formosa*:-- Attems 1936: 182 (list)

*Zephronia formosa*:-- Weidner 1960: 79 (list)

*Zephronia formosa*:-- Jeekel 2001: 19 (list).

Types: M and F syntypes.

Habitat: Burma: Carin Ghecu (village of Thao); Carin Cheba or Biapo (villages of Puepoli and Meteleo).

Deposited: NHML (Online Catalogue, unclear if types), 2 paratypes, ZMUH (Weidner 1960: 79).

***Zephronia gestri*** Pocock, 1890

*Zephronia gestri* Pocock, 1890b: 390 (first description)

*Zephronia gestri*:-- Pocock 1899: 470 (list)

*Zephronia gestri*-- Attems 1914: 145 (list)  
*Zephronia gestri*-- Attems 1936: 182 (list)  
*Zephronia gestri*-- Jeekel 2001: 19 (list).

Types: M holotype.  
 Habitat: Burma: Thagata on the slope of Mt. Mooleyit.  
 Deposited: NHML?

***Zephronia hirsti*** Jeekel, 2001  
*Zephronia hirsti* Jeekel 2001: 19 (first description)  
 --- *Zephronia rugulosa* Hirst, 1907: 215 (first description)  
*Zephronia rugulosa*-- Attems, 1914: 146 (list) **NOT**  
*Zephronia rugulosa* Gervais, 1847: 62  
 (= *Sphaerotherium rugulosum* Brandt, 1841: 363), and  
**NOT** *Zephronia rugulosa* Butler, 1872 = *Arthrosphaera*  
*rugulosa* Jeekel 2001 (synonymized Jeekel 2001: 19).

Types: 3 M syntypes.  
 Habitat: Malaysia: Pahang; Kelantan.  
 Deposited: NHML (Online Catalogue, unclear if types).

***Zephronia hirta*** Attems, 1936  
*Zephronia hirta* Attems, 1936: 179 (first description)  
*Zephronia hirta*— Rajulu 1970: 128 (list)  
*Zephronia hirta*— Jeekel 2001: 19 (list)  
*Zephronia hirta*— Sanyal et al. 2012: 865 (list).

Types: F holotype.  
 Habitat: India: Sureil, Darjeeling distr., Eastern Himalayas.  
 Deposited: Indian Museum Calcutta? (now Zoological  
 Survey of India, Kolkata).

***Zephronia hysophila*** Attems, 1936  
*Zephronia hysophila* Attems, 1936: (first description)  
*Zephronia hysophila*-- Rajulu 1970: 128 (list)  
*Zephronia hysophila*-- Jeekel 2001: 19 (list).

Types: F holotype (missing leg 2).  
 Habitat: India: Dikrang Valley, Darrang distr. Assam.  
 Deposited: Indian Museum Calcutta? (now Zoological  
 Survey of India, Kolkata).

***Zephronia impunctata*** Pocock, 1895  
*Zephronia impunctata* Pocock, 1895: 413 (first descrip.)  
*Zephronia impunctata*-- Flower 1901: 8 (list)  
*Zephronia impunctata*-- Hirst 1907: 215 (description)  
*Zephronia impunctata*-- Attems 1914: 146 (list)  
*Zephronia impunctata*-- Attems 1936: (new locality)  
*Zephronia impunctata*-- Wang 1967: 384 (list)  
*Zephronia impunctata*-- Jeekel 2001: 19 (list).

Types: holotype of unknown sex.  
 Habitat: Malaysia: Penang.  
 Deposited: NHML (Online Catalogue).

***Zephronia inferior*** Attems, 1936  
*Zephronia inferior* Attems, 1936: 178 (first description)  
*Zephronia inferior*-- Jeekel 2001: 19 (list).

Types: M and F syntypes.  
 Habitat: Burma: Moulmein.  
 Deposited: NHMW, unclear if types (Stagl & Schiller, in  
 prep.).

***Zephronia juvenis*** Attems, 1936  
*Zephronia juvenis* Attems, 1936: 171 (first description)  
*Zephronia juvenis*-- Rajulu 1970: 127 (list)  
*Zephronia juvenis*-- Jeekel 2001: 19 (list).

Types: F holotype.  
 Habitat: India: Darrang distr., Assam.  
 Deposited: NHMW, unclear if types, (Stagl & Schiller, in  
 prep.).

***Zephronia lignivora*** Attems, 1936  
*Zephronia lignivora* Attems, 1936: 174 (first description)  
*Zephronia lignivora*-- Rajulu 1970: 127 (list)  
*Zephronia lignivora*-- Jeekel 2001: 19 (list).

Types: M and F syntypes.  
 Habitat: India: Kobo; Geku, Assam.  
 Deposited: NHMW 2238 (Stagl & Schiller, in prep.).

***Zephronia maculata*** (Butler, 1874)  
*Sphaerotherium maculatum* Butler, 1874: 186 (first de-  
 scription)  
*Sphaerotherium maculatum*-- Preudhomme de Borre  
 1884: 27 (list)  
*Zephronia maculata*-- Pocock 1899: 467 (description)  
*Sphaerotherium maculatum*-- Attems 1914: 141 (list)  
*Sphaerotherium maculatum*-- Attems 1936: 192 (list)  
*Zephronia maculata*-- Jeekel 2001: 20 (list).

Types: F holotype.  
 Habitat: India: Sikkim.  
 Deposited: NHML (Online Catalogue).

***Zephronia manca*** Attems, 1936  
*Zephronia manca* Attems, 1936: 169 (first description)  
*Zephronia manca*-- Rajulu 1970: 127 (list)  
 ‘*Zephronia*’ *manca*-- Golovatch 1983 (list)



*Zephronia manca*:-- Enghoff et al. 2004: 32 (list).  
*Zephronia manca*:-- Jeekel 2001: 20 (list)  
*Zephronia manca*:-- Sanyal et al. 2012: 865 (list).

Types: M and F syntypes.

Habitat: Vietnam: Dran; Dalat, Langbian Prov., South An-nam. India: Dhobie Jhora,  
 Kurseong, Eastern Himalayas.

Deposited: NHMW 2239 (Stagl & Schiller, in prep.).

***Zephronia montana* (Karsch, 1881)**

*Sphaeropoeus montanus* Karsch, 1881: 31 (first descrip-tion)

*Zephronia montana*:-- Preudhomme de Borre: 25 (list)

*Sphaeropoeus montanus*:-- Attems 1914: 143 (list)

*Sphaeropoeus montanus*:-- Attems 1936: 192 (list)

*Sphaeropoeus montanus*:-- Moritz & Fischer 1974: 369 (list)

*Sphaeropoeus montanus*:-- Jeekel 2001: 24 (list)

*Zephronia montana*:-- Wesener 2015: 302 (new combina-tion).

Types: F holotype.

Habitat: "Himalaya"

Deposited: ZMB 55.

***Zephronia nepalensis* Wesener, 2015**

*Zephronia nepalensis* Wesener, 2015: 305 (first descrip.).

Types: M holotype, 1 M, 1 F paratypes.

Habitat: Nepal, Ilam District, Mai Pokhari.

Deposited: SMF (holotype), ZFMK MYR4173 & 4172 (paratypes).

***Zephronia nigrinota* Butler, 1872**

*Zephronia nigrinota* Butler, 1872: 356 (first description)

*Zephronia nigrinota*:-- Preudhomme de Borre 1884: 25 (list)

*Zephronia nigrinota*:-- Pocock 1899: 468 (description, new locality)

*Zephronia nigrinota*:-- Attems 1914: 146 (list)

*Zephronia nigrinota*:-- Attems 1936: 173 (description)

*Zephronia nigrinota*:-- Rajulu 1970: 127 (list)

*Zephronia nigrinota*:-- Jeekel 2001: 20 (list)

"*Zephronia*" *nigrinota*:-- Beron 2008: 169 (list)

*Zephronia nigrinola* [sic!]:-- Sanyal et al. 2012: 865 (list)

---- *Zephronia laevissima* Butler, 1874: 185 (first descrip.), synonymized with *Z. nigrinota* by Pocock 1899: 356

*Zephronia laevissima*:-- Preudhomme de Borre 1884: 24 (list)

*Zephronia laevissima*:-- Pocock 1899: 356 (synonymized with *Z. nigrinota*)

*Zephronia laevissima*:-- Attems 1914: 146 (list)

*Zephronia laevissima*:-- Attems 1936: 182 (list)

---- *Sphaerotherium politum* Butler, 1874: 186 (first de-scription). synonymized with *Z. nigrinota* by Pocock 1899: 356

*Sphaerotherium politum*:-- Preudhomme de Borre 1884: 27 (list)

*Sphaerotherium politum*:-- Pocock 1899: 356 (syn-onymized with *Z. nigrinota*)

*Sphaerotherium politum*:-- Attems 1914: 141 (list)

*Sphaerotherium politum*:-- Attems 1936: 193 (list).

Types: M and F syntypes.

Habitat: India: Sikkim Assam): Aideo, Assam; Darjeeling, Jorpokrei, Eastern Himalayas.

Deposited: NHML (Online Catalogue).

***Zephronia ovalis* Gray, 1832**

*Zephronia ovalis* Gray, 1832: 796 (first description)

*Zephronia ovalis*:-- Gervais 1837: 42 (list)

*Zephronia ovalis*:-- Newport 1844: 264 (new locality)

*Sphaerotherium ovale*:-- CL Koch 1847: 99 (list)

*Zephronia ovalis*:-- Butler 1873: 180 (list)

*Zephronia ovalis*:-- Olliff 1882: 30 (description)

*Zephronia ovalis*:-- Preudhomme de Borre 1884: 25 (list)

*Zephronia ovalis*:-- Attems 1914: 146 (list)

*Zephronia ovalis*:-- Jeekel 2001: 20 (list)

*Zephronia ovalis*:-- Golovatch et al. 2012: 286 (redescrip.)

*Zephronia ovalis*:-- Wesener 2014a: 204 (morphological phylogenetic analysis).

Types: M neotype (designated in Golovatch et al. 2012: 286).

Habitat: Vietnam, Cat Tien National Park.

Deposited: ZMUM.

***Zephronia pellita* Attems, 1935**

*Zephronia pellita* Attems, 1935: 141 (first description)

*Zephronia pellita*:-- Jeekel 2001: 21 (list).

Remarks: The distribution of this species lies outside the area of distribution of the other *Zephronia* species.

Types: M holotype.

Habitat: Indonesia: Sumatra, Indragiri, Sungei Lalah.

Deposited: NHMW (non-type material?) (Stagl & Schiller, in prep.).

***Zephronia profuga* Attems, 1936**

*Zephronia profuga* Attems, 1936: 181 (first description)

*Zephronia profuga*:-- Jeekel 2001: 21 (list).

Types: F holotype.  
Habitat: China: Hongkong.  
Deposited: NHMW 2240 (Stagl & Schiller, in prep.).

***Zephronia ridleyi*** Hirst, 1907  
*Zephronia ridleyi* Hirst, 1907: 216 (first description)  
*Zephronia ridleyi*:-- Attems 1914: 146 (list)  
*Zephronia ridleyi*:-- Jeekel 2001: 21 (list).

Types: M holotype.  
Habitat: Malaysia: Selangor.  
Deposited: NHML (Online Catalogue).

***Zephronia semilaevis*** Pocock, 1890  
*Zephronia semilaevis* Pocock, 1890b: 388 (first descrip.)  
*Zephronia semilaevis*:-- Pocock 1899: 470 (description)  
*Zephronia semilaevis*:-- Hirst 1907: 215 (list)  
*Zephronia semilaevis*:-- Attems 1914: 146 (list)  
*Zephronia semilaevis*:-- Attems 1936: 182 (list)  
*Zephronia semilaevis*:-- Jeekel 2001: 21 (list).

Types: M and F syntypes.  
Habitat: Burma: S. Tenasserim; Malewoon (Tenasserim).  
Deposited: NHML (Online Catalogue); 5 paratypes, ZMUH (Weidner 1960: 79).

***Zephronia siamensis*** Hirst, 1907  
*Zephronia siamensis* Hirst, 1907: 218 (first description)  
*Zephronia siamensis*:-- Attems 1914: 147 (list)  
*Zephronia siamensis*:-- Attems 1936: 182 (list)  
*Zephronia siamensis*:-- Jeekel 2001: 21 (list)  
*Zephronia siamensis*:-- Golovatch et al. 2012: 276 (genetic barcode).

Types: M and F syntypes.  
Habitat: Thailand: Kosichang; Chantaboon.  
Deposited: NHML (Online Catalogue).

***Zephronia specularis*** Attems, 1936  
*Zephronia specularis* Attems, 1936: 174 (first description)  
*Zephronia specularis*:-- Rajulu 1970: 127 (list)  
*Zephronia specularis*:-- Jeekel 2001: 21 (list).

Types: M and F syntypes.  
Habitat: India: Daffla Hills, Assam.  
Deposited: NHMW 2233 (Stagl & Schiller, in prep.).

***Zephronia tigrina*** Butler, 1872  
*Zephronia tigrina* Butler, 1872: 356 (first description)  
*Zephronia tigrina*:-- Preudhomme de Borre 1884: 25 (list)

*Zephronia tigrina*:-- Pocock 1899: 466 (description)  
*Zephronia tigrina*:-- Attems 1914: 147 (list)  
*Zephronia tigrina*:-- Jeekel 2001: 21 (list).

Types: M and F syntypes.  
Habitat: "East Indies". India: Darjeeling.  
Deposited: NHML (Online Catalogue).

***Zephronia tigrinoides*** Attems, 1936  
*Zephronia tigrinoides* Attems, 1936: 177 (first description)  
*Zephronia tigrinoides*:-- Rajulu 1970: 128 (list)  
*Zephronia tigrinoides*:-- Jeekel 2001: 21 (list)  
*Zephronia tigrinoides*:-- Sanyal et al. 2012: 865 (list).

Types: M holotype.  
Habitat: India: Sukna, Darjeeling distr., Eastern Himalayas.  
Deposited: Indian Museum Calcutta? (now Zoological Survey of India, Kolkata).

***Zephronia tumida*** Butler, 1882  
*Zephronia tumida* Butler, 1882: 196 (first description)  
*Zephronia tumida*:-- Preudhomme de Borre 1884: 25 (list)  
*Zephronia tumida*:-- Pocock 1899: 465 (description)  
*Zephronia tumida*:-- Attems 1914: 147 (list)  
*Zephronia tumida*:-- Attems 1936: 175 (description)  
*Zephronia tumida*:-- Rajulu 1970: 128 (list)  
*Zephronia tumida*:-- Jeekel 2001: 21 (list)  
*Zephronia tumida* var. *nigrinota* [sic!]:-- Sanyal et al. 2012: 865 (list)  
*Zephronia tumida*:-- Wesener 2015: 303 (redescription).

Types: M holotype.  
Habitat: India: N. Assam (Type); India: Harmutti, base of Daffla Hills; Sibsagar; Dikrang Valley, Darrang distr. Assam; Darjeeling, Eastern Himalayas. Myanmar: Bunna; Tavoy, Moti Ram, lower Burma, Kamaing, Myitkyina distr., upper Burma.  
Deposited: NHML BM1882.11.

***Zephronia viridescens*** Attems, 1936  
*Zephronia viridescens* Attems, 1936: 180 (first descrip.)  
*Zephronia viridescens*:-- Jeekel 2001: 22 (list)  
*Zephronia* cf. *viridescens*:-- Wongthamwanich et al. 2012b: 913 (ecology)  
*Zephronia* cf. *viridescens*:-- Sukteeka & Thanee 2015: 18 (ecology).

Types: 1 M and 1 F syntypes.  
Habitat: Burma: Tavoy.  
Deposited: Indian Museum Calcutta (now Zoological Survey of India, Kolkata).



### Tribe *Sphaeropoeini* Brölemann, 1913

Name adapted from Sphaeropoeidae Brölemann, 1913: 79; Hoffman 1976: 119; Hoffman 1980: 63; Jeekel 2001: 22. ---- Priobelini Hoffman, 1976, synonymized by Mauriès 2001: 140.

### *Sphaerobelum* Verhoeff, 1924

*Sphaerobelum* Verhoeff, 1924: 59 (first description); Attems 1926: 120 (list); Attems 1928: 203 (list); Attems 1936: 153 (list); Attems, 1938: 200 (new species); Attems 1943: 62 (list); Attems 1953: 155 (new species); Jeekel 1971: 28 (list); Jeekel 1974: 46 (classification); Hoffman 1976: 119 (list); Hoffman 1980: 63 (list); Jeekel 2001: 17 (list); Mauriès 2001: 141 (list); Wesener & VandenSpiegel 2009: 551 (list); Wongthamwanich et al. 2012a: 34 (new species).

**Description:** Anterior telopod with 3 or 4 podomeres distal to syncoxite. Second telopoditome with a curved process, more distally located telopoditomes usually simple. Posterior telopods with four telopoditomes, immovable finger apically massively enlarged, a unique character. 20–45 mm long. Tarsi with single apical spine. Surface variable, hairy to shiny and glabrous.

**Type-species:** *Sphaerobelum clavigerum* Verhoeff, 1924.

### Species included (5)

*Sphaerobelum bicornis* Attems, 1938 (Vietnam, Bana)  
*Sphaerobelum clavigerum* Verhoeff, 1924 (Vietnam, Tonkin)  
*Sphaerobelum hirsutum* Verhoeff, 1924 (Vietnam, Tonkin)  
*Sphaerobelum separatum* Attems, 1953 (Vietnam, Tonkin, Fan-Si-Pan)  
*Sphaerobelum truncatum* Wongthamwanich, 2012 (Thailand, Nan)

***Sphaerobelum bicornis*** Attems, 1938

*Sphaerobelum bicornis* Attems, 1938: 200 (first description)  
*Sphaerobelum bicornis*:-- Enghoff et al. 2004: 32 (list)  
*Sphaerobelum bicornis*:-- Jeekel 2001: 17 (list)  
*Sphaerobelum bicornis*:-- Wongthamwanich et al. 2012a: 34 (key).

Types: M and F syntypes.

Habitat: Vietnam: Bana (Tourane, Annam).

Deposited: NHMW 2196 (Stagl & Schiller, in prep.).

***Sphaerobelum clavigerum*** Verhoeff, 1924

*Sphaerobelum clavigerum* Verhoeff, 1924: 65 (first description)  
*Sphaerobelum clavigerum*:-- Attems 1936: 192 (list)  
*Sphaerobelum clavigerum*:-- Moritz & Fischer 1973: 368 (list)  
*Sphaerobelum clavigerum*:-- Golovatch 1983 (list)  
*Sphaerobelum clavigerum*:-- Jeekel 2001: 17 (list)  
*Sphaerobelum clavigerum*:-- Enghoff et al. 2004: 32 (list)  
*Sphaerobelum clavigerum*:-- Wongthamwanich et al. 2012a: 34 (key)  
*Sphaerobelum clavigerum*:-- Wesener 2014a: 204 (morphological phylogenetic analysis).

Types: Holotype M, syntype.

Habitat: Vietnam: Tonkin.

Deposited: Holotype ZMB 5747 (Moritz & Fischer 1973: 368); syntype HNHM (Korsos 1983: 117)

***Sphaerobelum hirsutum*** Verhoeff, 1924

*Sphaerobelum hirsutum* Verhoeff, 1924: 66 (first description)  
*Sphaerobelum hirsutum*:-- Attems, 1936: 192 (list)  
*Sphaerobelum hirsutum*:-- Golovatch 1983 (list)  
*Sphaerobelum hirsutum*:-- Jeekel 2001: 17 (list)  
*Sphaerobelum hirsutum*:-- Enghoff et al. 2004: 32 (list)  
*Sphaerobelum hirsutum*:-- Wongthamwanich et al. 2012a: 34 (key).

Types: 2 M, 2 F syntypes.

Habitat: Vietnam: Tonkin.

Deposited: Unknown, at least telopods at ZSM.

***Sphaerobelum separatum*** Attems, 1953

*Sphaerobelum separatum* Attems, 1953: 155 (first description)  
*Sphaerobelum separatum*:-- Golovatch 1983 (list)  
*Sphaerobelum separatum*:-- Jeekel 2001: 17 (list)  
*Sphaerobelum separatum*:-- Enghoff et al. 2004: 32 (list)  
*Sphaerobelum separatum*:-- Wongthamwanich et al. 2012a: 34 (key).

Types: M holotype.

Habitat: Vietnam: Fan-Si-Pan, Tonkin.

Deposited: NHMW 2227 (Stagl & Schiller, in prep.).

***Sphaerobelum truncatum*** Wongthamwanich, 2012

*Sphaerobelum truncatum* Wongthamwanich et al. 2012a: 34 (first description)  
*Sphaerobelum truncatum*:-- Wesener 2014a: 204 (morphological phylogenetic analysis).

Types: M holotype, 6 M, 6 F paratypes.

Habitat: Thailand, Nan Province, Na Rai Luang Sub-district, Pang Hi Village.

Deposited: CUMZ (holotype, 8 paratypes); FMNH (2 paratypes); ZFMK (2 paratypes).

### ***Prionobelum* Verhoeff, 1924**

*Prionobelum* Verhoeff, 1924: 58 (first description); Attems 1926: 120 (list); Attems 1935: 131 (new species); Attems 1936: 153 (list); Attems 1943: 61 (list); Attems 1953: 155 (list); Jeekel 1971: 27 (list); Jeekel 1974: 46 (classification); Hoffman 1976: 119 (classification); Hoffman 1980: 63 (list); Jeekel 2001: 16 (list); Mauriès 2001: 131 (classification); Wesener & VandenSpiegel 2009: 551 (list).

#### **Synonyms:**

---- *Chinosphaera* Attems, 1935: 130, synonymized by Mauriès 2001: 139. Attems 1936: 153; Attems 1943: 61; Jeekel 1971: 24; Jeekel 1974: 46; Hoffman 1976: 119; Hoffman 1980: 63; Jeekel 2001: 13; Mauriès 2001: 132.  
Type-species: *Chinosphaera maculosa* Attems.

**Description:** Anterior telopods similar to those of *Cryxus*, usually consisting of three telopoditomer. Telopoditomer 2 posteriorly with a ledge-like process. Telopoditomer 3 apically completely bent posteriorly and sharp-edged, forming a clamp with posterior process of telopoditomer 2. In some species a rudimentary telopoditomer 4 is present. Posterior telopods with four telopoditomer, telopoditomer 2 elongated. Telopoditomer 2 apically on posterior side, often with a sclerotized knob towards telopoditomer 3 and 4 with a single or bilobed membranous process. Tarsus with a single apical spine. Members 20–35 mm long.

**Type-species:** *Prionobelum durum* Verhoeff.

#### **Species included (7)**

*Prionobelum durum* Verhoeff, 1924 (Vietnam)  
*Prionobelum hainani* (Gressitt, 1941) (China: Hainan)  
*Prionobelum jolivet* Mauriès, 2001 (China: Hainan)  
*Prionobelum leve* (Attems, 1938) (Vietnam)  
*Prionobelum maculosum* (Attems, 1935) (China: Fukien)  
*Prionobelum majorinum* (Zhang & Lie, 1982) (China: Hainan)  
*Prionobelum multidentata* (Wang & Zhang, 1993) (China: Fujian)

***Prionobelum durum* Verhoeff, 1924**

*Prionobelum durum* Verhoeff, 1924: 64 (first description)

*Prionobelum durum*:-- Attems 1936: 192 (list)

*Prionobelum durum*:-- Moritz & Fischer 1974: 368 (list)

*Prionobelum durum*, var. *nitidum*:-- Verhoeff 1924: 65 (new locality)

*Prionobelum durum*:-- Golovatch 1983 (list)

*Prionobelum durum*:-- Jeekel 2001: 16 (list)

*Prionobelum durum nitidum*:-- Mauriès 2001: 132 (treated as subspecies instead of variety)

*Prionobelum durum durum*:-- Enghoff et al. 2004: 32 (list)

*Prionobelum durum nitidum*:-- Enghoff et al. 2004: 32 (list).

Remarks: Variety *P. durum* var. *nitidum* comes from the same locality as the type of *P. durum*. The varieties were treated as subspecies by Mauriès (2001: 132) and Enghoff et al. (2004: 32), a move not followed here.

Types: M syntype.

Habitat: Vietnam: Tonkin.

Deposited: ZMB 5745 (Moritz & Fischer 1974: 368).

***Prionobelum hainani* (Gressitt, 1941)**

*Zephronia hainani* Gressitt, 1941: 56 (first description)

*Zephronia hainani*:-- Mauriès 2001: 134 (redescription)

*Prionobelum hainani*:-- Mauriès 2001: 139 (new comb.).

Types: Holotype, paratypes.

Habitat: Tai-Pin-ts'uen (Dwa Bi), 375 m, foot of Loi Mother Mountain (19°N, 109°40'E), Hainan, China.

Deposited: CAS (Mauriès 2001: 134), Lingnan University, Canton, China (Gressitt 1941: 55).

***Prionobelum jolivet* Mauriès, 2001**

*Prionobelum jolivet* Mauriès, 2001: 136 (first descrip.).

Types: M holotype, 1 F allotype, 12 M, 4 F paratypes

Habitat: China, Hainan, 'sur une colline à l'ouest de la ville nouvelle (et universitaire) de Danzhou (109°33'E, 19°30'N), dans une plantation d'hévéas'.

Deposited: Holotype and paratypes MNHN CB054, 1 M, 1 F paratypes CAS, 1 M, 1 F paratypes ZMUM.

***Prionobelum leve* (Attems, 1938)**

*Chinosphaera levis* Attems, 1938: 198 (first description)

*Chinosphaera levis*:-- Golovatch 1983 (list)

*Chinosphaera levis*:-- Jeekel 2001: 14 (list)

*Prionobelum levis* [sic]:-- Mauriès 2001: 139 (new combination)

*Prionobelum leve*:-- Enghoff et al. 2004: 32 (list).

Types: M and F syntypes.

Habitat: Vietnam: Cauda, Nhalrang, South Annam; Ninhhoa, Nhalrang; Groa, Provo Khan Hoa, South Annam.

Deposited: NHMW 2197 (Stagl & Schiller, in prep.).



***Prionobelum maculosum*** (Attems, 1935)*Chinosphaera maculosa* Attems, 1935: 134 (first descrip.)*Chinosphaera maculosa*:-- Attems 1936: 191 (list)*Chinosphaera maculosa*:-- Attems 1938: 200 (list)*Chinosphaera maculosa*:-- Jeekel 2001: 14 (list)*Chinosphaera maculosa*:-- Mauriès 2001: 134 (redescription)*Prionobelum maculosum*:-- Mauriès 2001: 139 (new combination).

Types: M holotype.

Habitat: China: Foochow, Prov. Fokien.

Deposited: ZMUH (Mauriès 2001: 134).

***Prionobelum majorinum*** (Zhang & Lie, 1982)*Chinosphaera majorina* Zhang & Li, 1982: (first descrip.)*Prionobelum majorinum*:-- Mauriès 2001: 139 (new combination).

Types: M holotype and 1 M and 4 F paratypes.

Habitat: China, Hainan, S. of the island, Diaoluoshan, 18,47°N, 109,52°E.

Deposited: Institute of Zoology, Academia Sinica, holotype 078058-1, F paratype 078058-2.

***Prionobelum multidentata*** (Wang & Zhang, 1993)*Chinosphaera multidentata* Wang & Zhang, 1993: 849 (first description)*Prionobelum multidentata*:-- Mauriès 2001: 139 (new combination).

Types: M holotype.

Habitat: China, Fujian, Mount Longqi.

Deposited: Institute of Zoology, Academia Sinica, 910817-1.

***Leptoprotopus* Silvestri, 1897***Leptoprotopus* Silvestri, 1897c: 645 (first description); Jeekel 1971: 26 (list); Hoffman 1976: 119 (list); Hoffman 1980: 63 (list); Jeekel 1974: 46 (list, as synonym of *Sphaeropoeus*); Jeekel 2001: 22 (list); Mauriès 2001: 140 (list); Wesener & VandenSpiegel 2009: 551 (list).**Description:** First two male legs with greatly enlarged claws, claw as long as tarsus, a unique character for the order. Tooth of mandible also enormously enlarged and elongated. Anterior and posterior telopods greatly resembling those of *Sphaeropoeus*. 15 mm long.**Type-species:** *Sphaeropoeus gladiator* Pocock, 1894.**Monotypic****Remarks:** This genus was listed as a synonym of *Sphaeropoeus* (Jeekel 1974, Mauriès 2001). Because no argument for this synonymization was given, and the characters of *Sphaeropoeus gladiator* are unique for the Sphaerotheriida, *Leptoprotopus* is kept separate from *Sphaeropoeus*.***Leptoprotopus gladiator*** (Pocock, 1894)*Sphaeropoeus gladiator* Pocock, 1894: 327 (first descrip.)*Sphaeropoeus gladiator*:-- Silvestri 1895: 723 (list)*Sphaeropoeus gladiator*:-- Pocock 1895: 412 (list)*Leptoprotopus gladiator*:-- Silvestri 1897: 645 (new combination)*Sphaeropoeus gladiator*:-- Attems 1914: 144 (list)*Leptoprotopus gladiator*:-- Jeekel 2001: 22 (list).

Types: M holotype.

Habitat: Indonesia: Sumatra, Paningahan.

Deposited: NHML (Online Catalogue).

***Sphaeropoeus* Brandt, 1833***Sphaeropoeus* Brandt, 1833: 199 (first description); Brandt 1841a: 364 (description); Gervais 1847: 83 (list); C.L. Koch 1847: 38 (description); Humbert 1865: 37 (new species); Pocock 1894: 326 (new species); Pocock 1895: 412 (new species); Silvestri 1896b: 205; Flower 1901: 7 (new species); Attems 1914: 142 (list); Verhoeff 1924: 59 (list); Attems 1926: 120 (list); Attems 1928: 203 (list); Attems 1935: 130 (list); Attems 1936: 152 (list); Attems 1943: 61 (list); Jeekel 1951: 105 (new species); Attems 1953: 155 (list); Jeekel 1971: 28 (list); Jeekel 1974: 46 (classification); Hoffman 1976: 119 (list); Hoffman 1980: 63 (list); Hugot et al. 1991: 65 (parasites); Jeekel 2001: 22 (list); Mauriès 2001: 140 (list); Wesener & VandenSpiegel 2009: 551 (morphological phylogenetic analysis).**Synonyms**---- *Tonkinobelum* Verhoeff, 1924: 58 (first description), synonymized by Jeekel 1974: 46.

Attems 1926: 120 (list); Attems 1928: 203 (list); Verhoeff 1929: 1384 (description); Attems 1935: 128 (list); Attems 1936: 152 (list); Attems 1943: 62 (list); Jeekel 1971: 29 (list); Hoffman 1976: 119 (list); Hoffman 1980: 63 (list).

**Type species:** *Tonkinobelum maculatum* Verhoeff, 1924.---- *Pantitherium* Attems, 1932: 7 (first description), synonymized by Jeekel 1974: 46. Attems 1935: 131 (list); Attems 1943: 63 (list); Attems 1953: 155 (list); Jeekel 1971: 27 (list).**Type species:** *Pantitherium lugubre* Attems, 1932.---- *Lissosphaera* Attems, 1943: 62 (first description), synonymized by Jeekel 1974: 46. Jeekel 1971: 26 (list).**Type species:** *Lissosphaera speciosa* Attems, 1943.

**Description:** Anterior telopod with four podomeres distal to syncoxite. Telopoditomeres 2 and 3 each almost as long as telopoditomere 1. A specially shaped lateral process of telopoditomere 2 and a process of telopoditomere 3 form a clamp. Posterior telopods with four telopoditomeres, immovable finger slender, with membranous process. Telopoditomere 3 with small sclerotized teeth and white ledge. Telopoditomere 4 lacking teeth or spines, with a membranous ledge. 20–50 mm long. Apical antennomere axe-shaped, with up to 180 apical cones (record number of the order). Tarsi with a single apical spine, rarely two. In urgent need of a revision. The status of many species assigned to this genus is unclear.

**Type-species:** *Sphaeropoeus hercules* Brandt, 1833.

### Species included (20)

*Sphaeropoeus extinctus* Silvestri, 1895 (Malaysia, Indonesia: Nias)  
*Sphaeropoeus gisleni* (Verhoeff, 1939) (Sumatra)  
*Sphaeropoeus hercules* Brandt, 1833 (Sumatra, Malaysia)  
*Sphaeropoeus lugubris* (Attems, 1932) (Sumatra)  
*Sphaeropoeus maculatus* Verhoeff, 1924 (Vietnam)  
*Sphaeropoeus magnus* Chamberlin, 1921 (Borneo: Sarawak)  
*Sphaeropoeus malaccanus* Verhoeff, 1910–1914 (Singapore)  
*Sphaeropoeus modiglianii* Silvestri, 1895 (Sumatra, Malay Peninsula)  
*Sphaeropoeus pellitus* (Attems, 1943) (Sumatra)  
*Sphaeropoeus politus* (Attems, 1935) (Sumatra)  
*Sphaeropoeus punctulatissimus* Silvestri, 1897 (Sumatra)  
*Sphaeropoeus speciosus* (Attems, 1943) (Sumatra)  
*Sphaeropoeus stollii* Pocock, 1895 (Java)  
*Sphaeropoeus sumatrensis* (Chamberlin, 1945) (Sumatra)  
*Sphaeropoeus tatusiaeformis* Daday, 1889 (Sumatra)  
*Sphaeropoeus tigratus* Silvestri, 1897 (Sumatra)  
*Sphaeropoeus tuberculosus* Karsch, 1881 (Borneo)  
*Sphaeropoeus unciger* (Attems, 1943) (Sumatra)  
*Sphaeropoeus variegatus* Pocock, 1895 (unknown)  
*Sphaeropoeus velutinus* Carl, 1906 (Sumatra)

*Sphaeropoeus extinctus* Silvestri, 1895  
*Sphaeropoeus extinctus* Silvestri, 1895: 722 (first descrip.)  
*Sphaeropoeus extinctus*:-- Sinclair 1901: 527 (description)  
*Sphaeropoeus extinctus*:-- Attems 1914: 143 (list)  
*Sphaeropoeus extinctus*:-- Jeekel 2001: 22 (list).

Remark: The spelling “exstinctus” at the heading of the original description is an obvious printer’s error (Jeekel 2001).

Types: M and F syntypes.

Habitat: Indonesia: Nias, Hili Zabobo. Malaysia:

Tapelung, Patalung State.

Deposited: IEPN?.

*Sphaeropoeus gisleni* (Verhoeff, 1939)

*Tonkinobelum gisleni* Verhoeff, 1939: 2 (first description)

*Tonkinobelum gisleni*:-- Wang 1967: 484 (list)

*Sphaeropoeus gisleni*:-- Jeekel 2001: 23 (list, new comb.).

Types: M holotype.

Habitat: Indonesia: Sumatra.

Deposited: MZLU.

*Sphaeropoeus glabrus* (Attems, 1943)

*Arthrosphaera glabra* Attems, 1943: 72 (first description)

*Arthrosphaera glabra*:-- Wang 1967: 484 (list)

*Sphaeropoeus glabrus*:-- Jeekel 2001: 23 (list, new comb.).

Types: 2 M syntypes.

Habitat: Indonesia: Sumatra, Padang.

Deposited: NHMW 2215.

*Sphaeropoeus hercules* Brandt, 1833

*Sphaeropoeus hercules* Brandt, 1833: 200 (first descrip.)

*Zephronia hercules*:-- Gervais 1837: 43 (list)

*Sphaeropoeus hercules*:-- Brandt 1841a: 364 (new local.)

*Zephronia hercules*:-- Gervais 1847: 84 (list)

*Sphaeropoeus hercules*:-- CL. Koch 1863: 3 (description)

*Sphaeropoeus hercules*:-- Karsch 1881: 23 (description)

*Zephronia hercules*:-- Preudhomme de Borre 1884: 24 (list)

*Sphaeropoeus hercules*:-- Daday 1889: 141 (new local.)

*Sphaeropoeus hercules*:-- Pocock 1894: 326 (description)

*Sphaeropoeus hercules*:-- Silvestri 1895: 722 (new local.)

*Sphaeropoeus hercules*:-- Pocock 1895: 412 (new local.)

*Sphaeropoeus hercules*:-- Sinclair 1901: 527 (new local.)

*Sphaeropoeus hercules*:-- Carl 1906: 230 (description)

*Sphaeropoeus hercules*:-- Attems 1914: 143 (list)

*Sphaeropoeus hercules*:-- Moritz & Fischer 1973: 369 (list)

*Sphaeropoeus hercules*:-- Hoffman 1980: 62 (list)

*Sphaeropoeus hercules*:-- Jeekel 2001: 23 (list)

*Sphaeropoeus hercules*:-- De Zoysa et al. 2016: 456 (list)

---- *Sphaeropoeus banksianus* Butler, 1873: 181 (first descrip.), synonymized under *S. hercules* by Pocock, 1894: 326

*Zephronia Banksiana* [sic!]:-- Preudhomme de Borre 1884: 23 (list)

---- *Zephronia barbata* Butler, 1882: 197 (first descrip.), synonymized under *S. hercules* by Pocock 1894: 326

*Zephronia barbata*:-- Preudhomme de Borre 1884: 23 (list)

*Zephronia barbata* [sic!]:-- Wang 1967: 484 (list).

Remark: De Zoysa et al. (2016) list *S. hercules* from Sri Lanka, citing the wrong record by Pocock (1892) that was later corrected by the author.

Types: M holotype.

Habitat: Unknown (Type). Indonesia: Sumatra, Padang, Maninjau, Singkarah, Paningahan, Ajer Mantjur; Palembang; Tibing Tingie; M. Singalang, Ajer Mantdor, Kaju Tanam; Si Rambe; Palembang; Malaysia.

Deposited: M holotype, ZMB 54 (Moritz & Fischer 1973: 369).

***Sphaeropoeus lugubris*** (Attems, 1932)

*Pantitherium lugubre* Attems, 1932: 8 (first description)

*Panitherium* [sic!] *lugurbe* [sic!]:-- Wang 1967: 484 (list).

*Sphaeropoeus lugubris*:-- Jeekel 2001: 23 (list, new combination).

Types: M and F syntypes.

Habitat: Indonesia: Sumatra, Panti.

Deposited: NHMW 3955 (Stagl & Schiller, in prep.).

***Sphaeropoeus maculatus*** (Verhoeff, 1924)

*Tonkinobelum maculatum* Verhoeff, 1924: 62 (first description)

*Tonkinobelum maculatum*:-- Attems 1936: 192 (list)

*Tonkinobelum maculatum*:-- Wang 1967: 484 (list)

*Tonkinobelum maculatum*:-- Korsós 1983: 118 (list)

*Tonkinobelum maculatum*:-- Golovatch 1983 (list)

*Sphaeropoeus maculatus*:-- Jeekel 2001: 23 (list)

*Sphaeropoeus maculatus*:-- Enghoff et al. 2004: 32 (list).

Remark: According to Jeekel (2001), this species might represent a synonym of *S. tigratus* Silvestri, which got the wrong label.

Types: M syntype.

Habitat: Vietnam: Tonkin, Man Son.

Depository: HNMB 2858/1 (Korsós 1983).

***Sphaeropoeus magnus*** Chamberlin, 1921

*Sphaeropoeus magnus* Chamberlin, 1921: 62 (first description)

*Sphaeropoeus magnus*:-- Wang 1967: 484 (list)

*Sphaeropoeus magnus*:-- Jeekel 2001: 23 (list).

Types: M holotype.

Habitat: Sarawak: Ladong.

Deposited: MCZ 4708.

***Sphaeropoeus malaccanus*** Verhoeff, 1910

*Sphaeropoeus malaccamus* Verhoeff, 1910–1914: pl. 5 fig. 77 (first description)

*Sphaeropoeus malaccanus*:-- Verhoeff 1924: 68 (descrip.)

*Sphaeropoeus malaccanus*:-- Jeekel 2001: 23 (list)

*Sphaeropoeus malaccanus*:-- Decker 2013: 3 (list).

Types: 3 M, 1 F syntypes.

Habitat: Singapore.

Deposited: Unknown.

***Sphaeropoeus modiglianii*** Silvestri, 1895

*Sphaeropoeus modiglianii* Silvestri, 1895: 722 (first description)

*Sphaeropoeus modiglianii*:-- Sinclair 1901: 527 (new locality)

*Sphaeropoeus modiglianii*:-- Attems 1914: 143 (list)

*Sphaeropoeus modiglianii*:-- Jeekel 2001: 23 (list).

Types: M and F syntypes.

Habitat: Indonesia: Sumatra, Si Rambe (Type). “Malay Peninsula”.

Deposited: Unknown.

***Sphaeropoeus pellitus*** (Attems, 1943)

*Kophosphaera pellita* Attems, 1943: 66 (first description)

*Kophosphaera pellita*:-- Wang 1967: 485 (list)

*Sphaeropoeus pellitus*:-- Jeekel 2001: 24 (list, new combination).

Types: M and F syntypes.

Habitat: Indonesia: Sumatra.

Deposited: NHMW 2194.

***Sphaeropoeus politus*** (Attems, 1935)

*Pantitherium politum* Attems, 1935: 121 (first description)

*Panitherium* [sic!] *politum*:-- Wang 1967: 484 (list)

*Sphaeropoeus politus*:-- Jeekel 2001: 24 (list, new combination).

Types: M and F syntypes.

Habitat: Indonesia: Sumatra, Singkarak, Kepajang-Benkulen.

Deposited: NHMW 2217, 2218 (Stagl & Schiller, in prep.).

***Sphaeropoeus punctulatissimus*** Silvestri, 1897

*Sphaeropoeus punctulatissimus* Silvestri, 1897a: 14 (first description)

*Sphaeropoeus punctulatissimus*:-- Attems, 1914: 143 (list)

*Sphaeropoeus punctulatissimus*:-- Jeekel 2001: 24 (list).



Types: F syntypes.

Habitat: Indonesia: Sumatra, Deli.

Deposited: MTD 280.

***Sphaeropoeus speciosus*** (Attems, 1943)

*Lissosphaera speciosa* Attems, 1943: 63 (first description)

*Lissosphaera speciosa*:-- Wang 1967: 485 (list)

*Sphaeropoeus speciosus*:-- Jeekel 2001: 24 (list, new combination).

Types: M and F syntypes.

Habitat: Indonesia: Sumatra.

Deposited: NHMW 2219 (Stagl & Schiller, in prep.).

***Sphaeropoeus stollii*** Pocock, 1895

*Sphaeropoeus stollii* Pocock, 1895: 412 (first description)

*Sphaeropoeus stollii*:-- Attems 1914: 143 (list)

*Sphaeropoeus stollii*:-- Jeekel 2001: 24 (list).

Types: Unknown.

Habitat: Indonesia: Java: Djakarta.

Deposited: NHML?

***Sphaeropoeus sumatrensis*** (Chamberlin, 1945)

*Tonkinobelum sumatrense* Chamberlin, 1945: 2 (first description)

*Tonkinobelum sumatrensis* [sic!]:-- Wang 1967: 485 (list)

*Sphaeropoeus sumatrensis*:-- Jeekel 2001: 24 (list, new combination).

Types: 2 M syntypes.

Habitat: Indonesia: Sumatra, Manindjau.

Deposited: AMNH.

***Sphaeropoeus tatusiaeformis*** Daday, 1889

*Sphaeropoeus tatusiaeformis* Daday, 1889: 141 (first description)

*Sphaeropoeus tatusiaeformis*:-- Attems 1914: 144 (list)

*Sphaeropoeus tatusiaeformis*:-- Wang 1967: 384 (list)

*Sphaeropoeus tatusiaeformis*:-- Korsós 1983: 119 (list)

*Sphaeropoeus tatusiaeformis*:-- Jeekel 2001: 24 (list).

Types: Syntypes.

Habitat: Indonesia: Sumatra.

Depository: HNMB 648.14.d/5.

***Sphaeropoeus tigratus*** Silvestri, 1897

*Sphaeropoeus tigratus* Silvestri, 1897a: 14 (first description)

*Sphaeropoeus tigratus*:-- Carl 1922: 565 (new locality)

*Sphaeropoeus tigratus*:-- Attems 1914: 143 (list)

*Sphaeropoeus tigratus*:-- Jeekel 2001: 24 (list).

Types: M and F syntypes.

Habitat: Indonesia: Sumatra, Deli; Sumatra Bandar Baroe, Deli.

Deposited: MTD 278.

***Sphaeropoeus tuberculosus*** Karsch, 1881

*Sphaeropoeus tuberculosus* Karsch, 1881: 33 (first description)

*Zephronia tuberculosa*:-- Preudhomme de Borre 1884: 25 (list)

*Sphaeropoeus tuberculosus*:-- Attems 1914: 144 (list)

*Sphaeropoeus tuberculosus*:-- Moritz & Fischer, 1974: 370 (list)

*Sphaeropoeus tuberculosus*:-- Jeekel 2001: 24 (list).

Types: F holotype (Moritz & Fischer 1974: 370).

Habitat: Indonesia: Kalimantan, Benkajang.

Deposited: ZMB 590.

***Sphaeropoeus unciger*** (Attems, 1943)

*Kophosphaera uncigera* Attems, 1943: 66 (first description)

*Sphaeropoeus unciger*:-- Jeekel 2001: 24 (new combination, list).

Types: M holotype.

Habitat: Indonesia: Sumatra.

Deposited: NHMW 2195.

***Sphaeropoeus variegatus*** Pocock, 1895

*Sphaeropoeus variegatus* Pocock, 1895: 412 (first description)

*Sphaeropoeus variegatus*:-- Jeekel 2001: 24 (list).

Types: M holotype, .

Habitat: “?, Near Singapore”.

Deposited: NHML.

***Sphaeropoeus velutinus*** Carl, 1906

*Sphaeropoeus velutinus* Carl, 1906: 232 (first description)

*Sphaeropoeus velutinus*:-- Attems 1914: 144 (list)

*Sphaeropoeus velutinus*:-- Jeekel 2001: 24 (list)

---- *Sphaeropoeus velutinus*, var. *xanthopleurus* Carl, 1909: 249 (first description)

*Sphaeropoeus velutinus*, var. *xanthopleurus*:-- Attems, 1914: 144 (list)

*Sphaeropoeus velutinus*, var. *xanthopleurus*:-- Jeekel 2001: 25 (list).

Types: M and F syntypes.

Habitat: Indonesia: Sumatra, Deli; Karoo plain at foot of Mt. Si-Nabung.

Deposited: MHNG.

### **Tigridosphaera Jeekel, 2000**

*Tigridosphaera* Jeekel, 2000: 68 (first description); Jeekel 2001: 25 (list); Wesener & VandenSpiegel 2009: 551 (list).

**Description:** Anterior telopods with three podomeres distal to syncoxite. Telopoditomere 3 bent posteriad, forming clamps with the process of telopoditomere 2. Posterior telopods with four telopoditomeres. Tarsi with a single apical spine. Likely synonymous with *Prionobelum*.

**Type-species:** *Sphaeropoeus globusmagicus* Jeekel, 1951.

#### **Species included (4)**

*Tigridosphaera bimaculata* (Pocock, 1895) (Singapore)

*Tigridosphaera evansi* (Sinclair, 1901) (Malay Peninsula)

*Tigridosphaera globusmagicus* (Jeekel, 1951) (Malaysia)

*Tigridosphaera zonata* (Pocock, 1895) (Malaysia)

***Tigridosphaera bimaculata*** (Pocock, 1895)

*Sphaeropoeus bimaculatus* Pocock, 1895: 412 (first description)

*Sphaeropoeus bimaculatus*:-- Attems 1914: 143 (list)

*Sphaeropoeus bimaculatus*:-- Wang 1967: 484 (list)

*Tigridosphaera bimaculata*:-- Jeekel 2001: 25 (new combination)

*Tigridosphaera bimaculata*:-- Decker 2013: 3 (list).

Types: Unknown

Habitat: Singapore.

Deposited: NHML?

***Tigridosphaera evansi*** (Sinclair, 1901)

*Sphaeropoeus evansi* Sinclair, 1901: 526 (first description)

*Sphaeropoeus evansi*:-- Attems 1914: 143 (list)

*Tigridosphaera evansi*:-- Jeekel 2000: 69 (new comb.)

*Tigridosphaera evansi*:-- Jeekel 2001: 25 (list)

*Tigridosphaera evansi*:-- Decker 2013: 3 (list).

Types: M and F syntypes.

Habitat: "Malay Peninsula".

Deposited: NHML?

***Tigridosphaera globusmagicus*** (Jeekel, 1951)

*Sphaeropoeus globus-magicus* Jeekel, 1951: 101 (first description)

*Tigridosphaera globusmagicus*:-- Jeekel 2000: 68 (new combination)

*Tigridosphaera globusmagicus*:-- Jeekel 2001: 25 (list).

Types: M holotype, 1 M paratype.

Habitat: Malaysia: Kepong, Bukit Lepong Forest Reserve, Selangor.

Deposited: Holotype ZMA, paratype Raffles Museum Singapore.

***Tigridosphaera zonata*** (Pocock, 1895)

*Sphaeropoeus zonatus* Pocock, 1895: 412 (first description)

*Sphaeropoeus zonatus*:-- Attems 1914: 144 (list)

*Sphaeropoeus zonatus*:-- Wang 1967: 484 (list)

*Tigridosphaera zonata*:-- Jeekel 2001: 25 (list, new combination).

Types: Holotype of unknown sex.

Habitat: Malaysia: Malacca.

Deposited: NHML (Online Catalogue).

### **Subfamily Castanotheriinae Jeekel**

Jeekel, 1974: 46; Castanotheriini Hoffman, 1976: 119;

Hoffman, 1980: 63; Jeekel 2001: 25; Mauriès 2001: 141.

### **Castanotherium Pocock, 1895**

(Figs 11B, C)

*Castanotherium* Pocock, 1895: 413 (first description); Attems 1914: 142 (list); Verhoeff 1924: 58 (list); Attems 1926: 120 (list); Attems 1928: 203 (list); Attems 1935: 132 (list); Attems 1943: 62 (list); Attems 1953: 155 (list); Jeekel 1971: 23 (list); Jeekel 1974: 46 (classification); Hoffman 1976: 120 (classification); Hoffman 1980: 64 (list); Hugot et al. 1991: 65 (parasites); Mauriès 2001: 141 (list); Wesener & VandenSpiegel 2009: 551 (morphological phylogenetic analysis).

#### **Synonyms:**

---- *Borneopoeus* Verhoeff, 1924: 57, synonymized with *Castanotherium* by Hoffman 1976: 120. Attems 1926: 120; Attems 1928: 203; Verhoeff 1929: 1383; Attems 1935: 127; Attems 1936: 152; Attems 1943: 62; Attems 1953: 155; Jeekel 1971: 23; Jeekel 1974: 46; Jeekel 2001: 25.

**Type-species:** *Borneopoeus costatus* Verhoeff, 1924.

---- *Pulusphaera* Attems, 1935: 129, synonymized with

*Castanotherium* by Hoffman 1976: 120. Attems 1943: 62; Attems 1953: 155; Jeekel 1971: 28; Jeekel 1974: 46.  
Type-species: *Pulusphaera fera* Attems, 1935.

**Description**: Posterior and anterior telopods with only three podomeres distal to syncoxite. Immovable finger of posterior telopod greatly enlarged, in some species twice as wide as podomere 3. Antennae axe-shaped, with numerous apical cones. Thoracic shield at margin to groove often with ridges. Tarsi with a single apical spine.

**Type-species**: *Castanotherium hosei* Pocock, 1895.

### Species included (50)

*Castanotherium amythrum* (Attems, 1897) (Indonesia: Halmahera)  
*Castanotherium boetonense* Carl, 1912 (Indonesia: Butung)  
*Castanotherium carinatum* (Pocock, 1890) (Borneo)  
*Castanotherium castaneum* (Newport, 1844) (Philippines)  
*Castanotherium celebensense* Silvestri, 1897 (Indonesia: Sulawesi)  
*Castanotherium cinctum* (Carl, 1906) (Sumatra)  
*Castanotherium conspicuum* Silvestri, 1897 (Borneo)  
*Castanotherium costatum* (Verhoeff, 1924) (Borneo)  
*Castanotherium criniceps* (Attems, 1897) (Indonesia: Sulawesi)  
*Castanotherium crinitum* (Attems, 1935) (Borneo)  
*Castanotherium decoratum* Carl, 1912 (Indonesia: Sulawesi)  
*Castanotherium distinctum* Carl, 1912 (Indonesia: Sulawesi)  
*Castanotherium dorsispina* (Attems, 1936) (Borneo)  
*Castanotherium everettii* Pocock, 1895 (Borneo)  
*Castanotherium extraneum* (Attems, 1943) (Java)  
*Castanotherium falcicornis* (Tömösváry, 1885) (Borneo)  
*Castanotherium ferum* (Attems, 1935) (Borneo, Bismarck Islands?)  
*Castanotherium fulvicorne* Pocock, 1895 (Philippines)  
*Castanotherium glabratum* (Newport, 1844) (Philippines, Borneo?)  
*Castanotherium granulatum* (Tömösváry, 1885) (Borneo)  
*Castanotherium hirsutellum* Pocock, 1895 (Philippines)  
*Castanotherium hosei* Pocock, 1895 (Borneo)  
*Castanotherium humile* (Silvestri, 1895) (Indonesia: Bua-Bua)  
*Castanotherium ignobile* (Butler, 1872) (Java)  
*Castanotherium indigenum* (Attems, 1943) (Borneo)  
*Castanotherium innominatum* (Butler, 1872) (Philippines)  
*Castanotherium insigne* (Brandt, 1833) (Java)  
*Castanotherium laeve* Carl, 1912 (Indonesia: Sulawesi)  
*Castanotherium lamprongse* (Chamberlin, 1945) (Sumatra)

*Castanotherium leium* Chamberlin, 1921 (Philippines)  
*Castanotherium moderatum* (Chamberlin, 1945) (Java)  
*Castanotherium nigriceps* (Pocock, 1894) (Java)  
*Castanotherium nigromaculatum* Silvestri, 1897 (Borneo)  
*Castanotherium obscurum* Chamberlin, 1921 (Borneo)  
*Castanotherium ornatum* Carl, 1912 (Indonesia: Sulawesi)  
*Castanotherium pellitum* Attems, 1932 (Borneo)  
*Castanotherium pilosum* Carl, 1912 (Indonesia: Sulawesi)  
*Castanotherium plasoni* (Attems, 1943) (Indonesia: Java)  
*Castanotherium pyrrhomelanum* (Attems, 1897) (Borneo)  
*Castanotherium rufipes* (Pocock, 1894) (Indonesia: Java)  
*Castanotherium simplex* (Carl, 1909) (Indonesia: Java)  
*Castanotherium sparsepunctatum* Carl, 1912 (Indonesia: Sulawesi)  
*Castanotherium stellatum* Carl, 1912 (Indonesia: Sulawesi)  
*Castanotherium sulcicollis* (Karsch, 1881) (Java, Borneo, Philippines?)  
*Castanotherium suspectum* Carl, 1912 (Indonesia: Sulawesi)  
*Castanotherium tivium* (Chamberlin, 1945) (Indonesia: Sumatra)  
*Castanotherium tricollis* (Karsch, 1881) (Indonesia: Sumatra, Java?)  
*Castanotherium variegatum* (Attems, 1943) (Borneo)  
*Castanotherium volzi* (Carl, 1906) (Indonesia: Sumatra)  
*Castanotherium whiteheadi* Pocock, 1895 (Borneo)

***Castanotherium amythrum*** (Attems, 1897)  
*Zephronia amythra* Attems, 1897: 483 (first description)  
*Zephronia amythra*:-- Attems 1914: 144 (list)  
*Castanotherium amythrum*:-- Chamberlin 1920: 91 (list)  
*Castanotherium amythrum*:-- Jeekel 2001: 26 (list).

Types: F holotype.  
Habitat.: Indonesia: Halmahera, Soah Konorah.  
Deposited: NHMW?

***Castanotherium boetonense*** Carl, 1912  
*Castanotherium boetonense* Carl, 1912: 119 (first descrip.)  
*Castanotherium boetonense*:-- Attems 1914: 149 (list)  
*Castanotherium boetonense*:-- Chamberlin 1920: 91 (list)  
*Castanotherium boetonense*:-- Jeekel 2001: 26 (list).

Types: F holotype.  
Habitat: Indonesia: Butung island, SE of Sulawesi.  
Deposited: MHNG.

***Castanotherium carinatum*** (Pocock, 1890)  
*Zephronia carinata* Pocock, 1890a: 82 (first description)  
*Zephronia carinata*:-- Attems 1914: 144 (list)



*Castanotherium carinatum*:-- Chamberlin 1921: 69 (list)  
*Castanotherium carinatum*:-- Jeekel 2001: 26 (list).

Type: 1 M, 1 F syntypes.  
 Habitat: North Borneo: Mt. Kina Balu.  
 Deposited: NHML (Online Catalogue).

*Castanotherium castaneum* (Newport, 1844)  
*Zephronia castanea* Newport, 1844: 265 (first description)  
*Zephronia castanea*:-- Butler 1873: 181 (list)  
*Zephronia castanea*:-- Preudhomme de Borre 1884: 24 (list)  
*Zephronia castanea*:-- Attems 1914: 145 (list)  
*Castanotherium castaneum*:-- Jeekel 2001: 26 (list, new combination).

Types: Holotype of unknown sex.  
 Habitat: Philippines.  
 Deposited: NHML (Online Catalogue).

*Castanotherium celebense* Silvestri, 1897  
*Castanotherium celebense* Silvestri, 1897a: 15 (first description)  
*Castanotherium celebense*:-- Carl 1912: 86 (list)  
*Castanotherium celebense*:-- Attems 1914: 149 (list)  
*Castanotherium celebense*:-- Chamberlin 1920: 90 (list)  
*Castanotherium celebense*:-- Jeekel 2001: 26 (list).

Types: M and F syntypes.  
 Habitat: Indonesia: Sulawesi, Minahassa.  
 Deposited: MTD 282.

*Castanotherium cinctum* (Carl, 1906)  
*Sphaeropoeus cinctus* Carl, 1906: 235 (first description)  
*Castanotherium cinctum*:-- Attems 1914: 149 (list)  
*Castanotherium cinctum*:-- Jeekel 2001: 26 (list).

Types: M and F syntypes.  
 Habitat: Indonesia: Sumatra.  
 Deposited: MHNG.

*Castanotherium conspicuum* Silvestri, 1897  
*Castanotherium conspicuum* Silvestri, 1897a: I (first description)  
*Castanotherium conspicuum*:-- Attems 1914: 149 (list)  
*Castanotherium conspicuum*:-- Jeekel 2001: 26 (list).

Types: F holotype.  
 Habitat: Indonesia: Southwest Kalimantan.  
 Deposited: MTD 282.

*Castanotherium costatum* (Verhoeff, 1924)  
*Borneopoeus costatus* Verhoeff, 1924: 60 (first description)  
*Castanotherium costatum*:-- Jeekel 2001: 26 (list, new combination).

Types: 3 M, 1 F syntypes.  
 Habitat: "Central Borneo".  
 Deposited: NHML (Online Catalogue).

*Castanotherium criniceps* (Attems, 1897)  
*Zephronia criniceps* Attems, 1897: 482 (first description)  
*Castanotherium criniceps*:-- Carl 1906: 234 (list)  
*Castanotherium criniceps*:-- Carl 1912: 86 (description)  
*Castanotherium criniceps*:-- Attems 1914: 149 (list)  
*Castanotherium criniceps*:-- Chamberlin 1920: 90 (list)  
*Castanotherium criniceps*:-- Jeekel 2001: 26 (list).

Types: M holotype.  
 Habitat: Indonesia: Sulawesi, Minahassa (Type); North Sulawesi: Vokano Sopotan, Tomohon.  
 Deposited: NHMW?

*Castanotherium crinitum* (Attems, 1935)  
*Pulusphaera crinita* Attems, 1935: 138 (first description)  
*Castanotherium crinitum*:-- Jeekel 2001: 26 (list, new combination).

Types: M holotype.  
 Habitat: Indonesia: Kalimantan, Bt. Abat.  
 Deposited: NHMW?

*Castanotherium decoratum* Carl, 1912  
*Castanotherium decoratum* Carl, 1912: 118 (first description)  
*Castanotherium decoratum*:-- Attems 1914: 150 (list)  
*Castanotherium decoratum*:-- Chamberlin 1920: 91 (list)  
*Castanotherium decoratum*:-- Jeekel 2001: 26 (list).

Types: M and F syntypes.  
 Habitat: Indonesia: Sulawesi, Loka, near Bonthain, South Sulawesi.  
 Deposited: MHNG.

*Castanotherium distinctum* Carl, 1912  
*Castanotherium distinctum* Carl, 1912: 106 (first description)  
*Castanotherium distinctum*:-- Attems 1914: 150 (list)  
*Castanotherium distinctum*:-- Chamberlin 1920: 90 (list)  
*Castanotherium distinctum*:-- Jeekel 2001: 27 (list).

Types: M holotype.

Habitat: Indonesia: Sulawesi, Ussu (Southeast Sulawesi).

Deposited: MHNG.

***Castanotherium dorsispina*** (Attems, 1936)

*Borneopoeus dorsispina* Attems, 1936: 193 (first descrip.)

*Castanotherium dorsispina*:-- Jeekel 2001: 27 (list, new combination).

Types: F holotype.

Habitat: Sarawak: Kapit.

Deposited: NHMW, unclear if types (Stagl & Schiller, in prep.).

***Castanotherium everettii*** Pocock, 1895

*Castanotherium everettii* Pocock, 1895: 414 (first descrip.)

*Castanotherium everettii*:-- Attems 1914: 150 (list)

*Castanotherium everettii*:-- Jeekel 2001: 27 (list).

Types: Syntypes?

Habitat: Sarawak.

Deposited: NHML (Online Catalogue).

***Castanotherium extraneum*** (Attems, 1943)

*Pulusphaera extranea* Attems, 1943: 70 (first description)

*Castanotherium extraneum*:-- Jeekel 2001: 27 (list, new combination).

Types: M holotype.

Habitat: Indonesia: Java, Samarang.

Deposited: NHMW 118/70 (Stagl & Schiller, in prep.).

***Castanotherium falcicorne*** (Tömösváry, 1885)

*Sphaeropoeus falcicornis* Tömösváry, 1885: 68 (first description)

*Sphaeropoeus falcicornis*:-- Silvestri 1896a: 21 (list)

*Sphaeropoeus falcicornis*:-- Attems 1914: 144 (list)

*Sphaeropoeus falcicornis*:-- Korsós 1983: 118 (list)

*Castanotherium falcicorne*:-- Jeekel 2001: 27 (list, new combination).

Types: Syntypes.

Locality: Indonesia, Kalimantan, Matang.

Deposited: HNHM 305.62/17 (Korsós 1983).

***Castanotherium ferum*** (Attems, 1935)

*Pulusphaera fera* Attems, 1935: 136 (first description)

*Pulusphaera fera*:-- Attems 1943: 71 (new locality)

*Castanotherium ferum*:-- Jeekel 2001: 27 (list, new combination).

Type: M syntypes.

Habitat: Indonesia: Pulu Miang, East coast of Kalimantan. North Borneo: Landakan. "Bismarckarchipel".

Deposited: NHMW 2230 (Stagl & Schiller, in prep.).

***Castanotherium fulvicorne*** Pocock, 1895

*Castanotherium fulvicorne* Pocock, 1895: 414 (first description)

*Castanotherium fulvicorne*:-- Attems 1914: 150 (list)

*Castanotherium fulvicorne*:-- Jeekel 2001: 27 (list).

Types: Holotype of unknown sex.

Habitat: Philippines: Albay.

Deposited: NHML (Online Catalogue).

***Castanotherium glabratum*** (Newport, 1844)

*Zephronia glabrata* Newport, 1844: (first description)

*Zephronia glabrata*:-- Gervais 1847: 84 (list)

*Zephronia glabrata*:-- Preudhomme de Borre 1884: 24 (list)

*Zephronia glabrata*:-- Attems 1914: 145 (list)

*Castanotherium glabrata*:-- Jeekel 2001: 27 (list, new combination)

--- *Sphaeropoeus bicollis* Karsch, 1881: 33, synonymized with *C. glabrata* by Pocock 1894: 331

*Sphaeropoeus bicollis*:-- Preudhomme de Borre 1884: 23 (list)

*Sphaeropoeus bicollis*:-- Pocock 1894: 331 (synonymization)

*Sphaeropoeus bicollis*:-- Silvestri 1896a: 21 (list)

*Sphaeropoeus bicollis*:-- Attems 1914: 142 (list)

*Sphaeropoeus bicollis*:-- Moritz & Fischer 1974: 368 (list).

Remark: Although synonymized by Pocock, the identity of these two nominal species seems doubtful. Actual comparison of the type material is necessary (Jeekel 2001).

Types: *C. glabrata*: holotype?, *S. bicollis*: M holotype

Habitat: *C. glabrata*: Philippines; *S. bicollis*: Habitat: Indonesia: Kalimantan, Sampit.

Deposited: *C. glabrata*: NHML (Online Catalogue, unclear if types), *S. bicollis*: ZMB 714.

***Castanotherium granulatum*** (Tömösváry, 1885)

*Sphaeropoeus granulatus* Tömösváry, 1885: 68 (first description)

*Sphaeropoeus granulatus*:-- Silvestri 1896a: 21 (list)

*Sphaeropoeus granulatus*:-- Attems 1914: 144 (list)

*Sphaeropoeus granulatus*:-- Korsós 1983: 118 (list)

*Castanotherium granulatum*:-- Attems 1936: 193 (new combination)

*Castanotherium granulatum*:-- Jeekel 2001: 27 (list).

Types: Syntypes.

Locality: Indonesia, Kalimantan, Matang.

Deposited: HNHM 305.60/6.

***Castanotherium hirsutellum*** Pocock, 1895

*Castanotherium hirsutellum* Pocock, 1895: 414 (first description)

*Castanotherium hirsutellum*:-- Attems 1914: 150 (list)

*Castanotherium hirsutellum*:-- Wang 1951: 14 (list)

*Castanotherium hirsutellum*:-- Wang 1961: 102 (list)

*Castanotherium hirsutellum*:-- Jeekel 2001: 27 (list).

Types: Holotype of unknown sex.

Habitat: Philippines: Palawan.

Deposited: NHML (Online Catalogue).

***Castanotherium hosei*** Pocock, 1895

*Castanotherium hosei* Pocock, 1895: 414 (first description)

*Castanotherium hosei*:-- Attems 1914: 150 (list)

*Castanotherium hosei*:-- Hoffman 1976: 123 (description)

*Castanotherium hosei*:-- Jeekel 2001: 28 (list).

Types: Holotype of unknown sex.

Habitat: Sarawak: Baram.

Deposited: NHML (Online Catalogue).

***Castanotherium humile*** (Silvestri, 1895)

*Zephronia humilis* Silvestri, 1895b: 723 (first description)

*Zephronia humilis*:-- Attems 1914: 145 (list)

*Castanotherium humile*:-- Jeekel 2001: 28 (list, new combination).

Types: M and F syntypes.

Habitat: Indonesia: Engano: Bua-Bua.

Deposited: IEPN.

***Castanotherium ignobile*** (Butler, 1872)

*Zephronia ignobilis* Butler, 1872: 357 (first description)

*Zephronia ignobilis*:-- Butler 1873: 180 (description)

*Zephronia ignobilis*:-- Preudhomme de Borre 1884: 24 (list)

*Zephronia ignobilis*:-- Pocock 1894: 331 (list)

*Zephronia ignobilis*:-- Attems 1914: 146 (list)

*Castanotherium ignobile*:-- Jeekel 2001: 28 (list, new combination).

Types: Holotype of unknown sex.

Habitat: Indonesia: Java.

Deposited: NHML (Online Catalogue, unclear if types).

***Castanotherium indigenum*** (Attems, 1943)

*Pulusphaera indigena* Attems, 1943: 69 (first description)

*Castanotherium indigenum*:-- Jeekel 2001: 28 (list, new combination).

Types: M holotype.

Habitat: "Borneo".

Deposited: NHMW 2229 (Stagl & Schiller, in prep.).

***Castanotherium innominatum*** (Butler, 1872)

*Zephronia innominata* Butler, 1872: 357 (first description)

*Zephronia innominata*:-- Butler 1873: 181 (new locality)

*Zephronia innominata*:-- Preudhomme de Borre 1884: 24 (list)

*Zephronia innominata*:-- Attems 1914: 146 (list)

*Zephronia innominata*:-- Wang 1951: 13 (list)

*Zephronia innominata*:-- Wang 1961: 101 (list)

*Castanotherium innominatum*:-- Jeekel 2001: 28 (list, new combination).

Remark: The name of this species was already published by Newport in 1844, but did not include a description. Butler eventually validated the name in 1872.

Types: Holotype of unknown sex.

Habitat: Philippines.

Deposited: NHML (Online Catalogue).

***Castanotherium insigne*** (Brandt, 1833)

*Sphaeropoeus insignis* Brandt, 1833: 200 (first description)

*Zephronia insignis*:-- Gervais 1837: 43 (list)

*Sphaeropoeus insignis*:-- Brandt 1841a: 364 (list)

*Zephronia insignis*:-- Gervais 1847: 84 (list)

*Sphaeropoeus insignis*:-- Karsch 1881: 34 (description)

*Zephronia insignis*:-- Preudhomme de Borre 1884: 24 (list)

*Sphaeropoeus insignis*:-- Pocock 1894: 331

*Castanotherium insigne*:-- Jeekel 2001: 28 (list, new combination)

---- *Zephronia javanica* Gervais, 1837: 43 (nomen nudum), synonymized by Brandt 1841.

*Zephronia javanica*:-- Guérin, 1838: 5 (locality)

*Sphaerotherium javanicum*:-- C.L. Koch 1847: 99 (list)

*Sphaerotherium javanicum*:-- Butler, 1873: 175 (new locality)

*Sphaerotherium javanicum*:-- Preudhomme de Borre 1884: 27 (list).

Remarks: Perhaps the type material of these two nominal species, *S. insignis* and *Z. javanica*, is still in existence; this could make it possible to finally clarify the confusion in the classical literature. Preudhomme de Borre (1884) viewed *Z. insignis* as synonym of *Z. ovale*.



Types: 1 M, 2 F, 2 immature syntypes.  
Habitat: Indonesia: Java (Type); “East Indies”.  
Deposited: ZISP.

***Castanotherium laeve* Carl, 1912**

*Castanotherium laeve* Carl, 1912: 110 (first description)  
*Castanotherium laeve*:-- Attems 1914: 150 (list)  
*Castanotherium laeve*:-- Chamberlin 1920: 90 (list)  
*Castanotherium laeve*:-- Jeekel 2001: 28 (list).

Types: 2 F syntypes.  
Habitat: Indonesia: Matinang chain, North Sulawesi.  
Deposited: MHNG.

***Castanotherium lamprongse* (Chamberlin, 1945)**

*Sphaeropoeus lamprongsis* Chamberlin, 1945: 1 (first description)  
*Sphaeropoeus lamprongsis*:-- Wang 1967: 484 (list)  
*Castanotherium lamprongse*:-- Jeekel 2001: 28 (list, new combination).

Types: 2 M, 3 F syntypes.  
Habitat: Indonesia: Sumatra, Lamprongs, Wai Lima.  
Deposited: AMNH.

***Castanotherium leium* Chamberlin, 1921**

*Castanotherium leium* Chamberlin, 1921: 60 (first description)  
*Castanotherium leium*:-- Wang, 1951: 14 (new locality)  
*Castanotherium leium*:-- Wang, 1961: 101 (new locality)  
*Castanotherium leium*:-- Jeekel 2001: 29 (list).

Types: F holotype.  
Habitat: Philippines: Luzon, Mt. Makiling; Mindanao, Sungao; Zamboanga; Samar.  
Deposited: MCZ 4690.

***Castanotherium moderatum* (Chamberlin, 1945)**

*Zephronia moderata* Chamberlin, 1945: 1 (first description)  
*Zephronia moderata*:-- Wang 1967: 484 (list)  
*Castanotherium moderatum*:-- Jeekel 2001: 29 (list, new combination).

Types: M holotype.  
Habitat: Indonesia: Java, Tjibodas.  
Deposited: AMNH.

***Castanotherium nigriceps* (Pocock, 1894)**

*Zephronia nigriceps* Pocock, 1894: 329 (first description)

*Zephronia nigriceps*:-- Silvestri 1895b: 723 (new locality)

*Zephronia nigriceps*:-- Attems 1907: 105 (new locality)

*Zephronia nigriceps*:-- Attems 1914: 146 (list)

*Castanotherium nigriceps*:-- Jeekel 2001: 29 (list, new combination)

— *Sphaerotherium kochii*:-- Butler 1873: 177 (misidentification), **NOT** *S. kochii* Butler, 1873: 177, a synonym of *S. punctatum* Brandt, synonymized by Pocock 1894: 331.

Types: M and F syntypes.  
Habitat: Indonesia: Java: Bogor; Mentawai; Si-Oban. Tjibodas.  
Deposited: NHML (Online Catalogue, unclear if types).

***Castanotherium nigromaculatum* Silvestri, 1897**

*Castanotherium nigro-maculatum* Silvestri, 1897a: 15 (first description)

*Castanotherium nigromaculatum*:-- Attems 1914: 150 (list)

*Castanotherium nigromaculatum*:-- Jeekel 2001: 29 (list).

Types: M holotype.  
Habitat: Indonesia: Kalimantan: Amuntai.  
Deposited: MTD 281.

***Castanotherium obscurum* Chamberlin, 1921**

*Castanotherium obscurum* Chamberlin, 1921: 60 (first description)

*Castanotherium obscurum*:-- Wang 1967: 484 (list)

*Castanotherium obscurum*:-- Jeekel 2001: 29 (list).

Types: M holotype, M and F paratypes.  
Habitat: Sarawak: Ladong.  
Deposited: Holotype MCZ 4688, paratypes MCZ 4689.

***Castanotherium ornatum* Carl, 1912**

*Castanotherium ornatum* Carl, 1912: 116 (first description)

*Castanotherium ornatum*:-- Attems 1914: 150 (list)

*Castanotherium ornatum*:-- Chamberlin 1920: 90 (list)

*Castanotherium ornatum*:-- Jeekel 2001: 29 (list).

Types: M and F syntypes.  
Habitat: Indonesia: Sulawesi, Bontorio, South Sulawesi.  
Deposited: MHNG.

***Castanotherium pellitum* Attems, 1932**

*Castanotherium pellitum* Attems, 1932: 5 (first description)

*Zephronia pellita*:-- Wang 1967: 484 (list)  
*Castanotherium pelltum*:-- Jeekel 2001: 29 (list).

Type: M holotype.  
 Habitat: Indonesia: Kalimantan, Tandjoeng. Karong.  
 Deposited: NHMW 2226 (Stagl & Schiller, in prep.).

***Castanotherium pilosum*** Carl, 1912  
*Castanotherium pilosum* Carl, 1912: 114 (first description)  
*Castanotherium pilosum*:-- Attems 1914: 150 (list)  
*Castanotherium pilosum*:-- Chamberlin 1920: 90 (list)  
*Castanotherium pilosum*:-- Jeekel 2001: 29 (list).

Types: 2 F syntypes.  
 Habitat: Indonesia: Sulawesi, Bontorio, South Sulawesi;  
 Bowonglangi, South Sulawesi.  
 Deposited: MHNG.

***Castanotherium plasoni*** (Attems, 1943)  
*Pulusphaera plasoni* Attems, 1943: 70 (first description)  
*Castanotherium plasoni*:-- Jeekel 2001: 29 (list, new combination).

Types: M holotype.  
 Habitat: Indonesia: Java, Samarang.  
 Deposited: NHMW 2232 (Stagl & Schiller, in prep.).

***Castanotherium pyrrhomelanum*** (Attems, 1897)  
*Zephronia pyrrhomelana* Attems, 1897: 480 (first description)  
*Zephronia pyrrhomelana*:-- Attems 1914: 146 (list)  
*Castanotherium pyrrhomelanum*:-- Jeekel 2001: 29 (list, new combination).

Types: Syntypes of unknown sex.  
 Habitat: Sarawak: Baram river.  
 Deposited: NHMW 2234 (Stagl & Schiller, in prep.).

***Castanotherium rufipes*** (Pocock, 1894)  
*Zephronia rufipes* Pocock, 1894: 331 (first description)  
*Zephronia rufipes* ("ruficeps"):-- Attems 1898: 509 (new locality)  
*Zephronia rufipes* ("ruficeps"):-- Attems 1903: 64 (new locality)  
*Zephronia rufipes* ("ruficeps"):-- Attems 1914: 147 (list)  
*Castanotherium rufipes*:-- Jeekel 2001: 29 (list, new combination).

Type: M holotype.  
 Habitat: Indonesia: Java, Tjibodas.  
 Deposited: NHML (online catalogue).

***Castanotherium simplex*** (Carl, 1909)  
*Sphaeropoeus simplex* Carl, 1909: 250 (first description)  
*Castanotherium simplex*:-- Attems 1914: 150 (list)  
*Castanotherium simplex*:-- Jeekel 2001: 29 (list).

Types: M and F syntypes.  
 Habitat: Indonesia: Java: Prigen.  
 Deposited: MHNG.

***Castanotherium sparsepunctatum*** Carl, 1912  
*Castanotherium sparsepunctatum* Carl, 1912: 120 (first description)  
*Castanotherium sparsepunctatum*:-- Attems 1914: 150 (list)  
*Castanotherium sparsepunctatum*:-- Chamberlin 1920: 91 (list)  
*Castanotherium sparsepunctatum*:-- Jeekel 2001: 30 (list).

Types: F holotype.  
 Habitat: Indonesia: Sulawesi, Bowonglangi, South Sulawesi.  
 Deposited: MHNG.

***Castanotherium stellatum*** Carl, 1912  
*Castanotherium stellatum* Carl, 1912: 122 (first description)  
*Castanotherium stellatum*:-- Attems 1914: 150 (list)  
*Castanotherium stellatum*:-- Chamberlin 1920: 91 (list)  
*Castanotherium stellatum*:-- Jeekel 2001: 30 (list).

Types: F syntypes.  
 Habitat: Indonesia: Sulawesi, Loka, South Sulawesi.  
 Deposited: MHNG.

***Castanotherium sulcicollis*** (Karsch, 1881)  
*Sphaeropoeus sulcicollis* Karsch, 1881: 32 (first description)  
*Zephronia sulcicollis*:-- Preudhomme de Borre 1884: 25 (list)  
*Sphaeropoeus sulcicollis*:-- Tömösváry 1885: 68 (new locality)  
*Sphaeropoeus sulcicollis*:-- Silvestri 1896a: 21 (list)  
*Sphaeropoeus sulcicollis*:-- Attems 1914: 143 (list)  
*Sphaeropoeus sulcicollis*:-- Wang 1951: 13 (list)  
*Sphaeropoeus sulcicollis*:-- Wang 1961: 101 (list)  
*Sphaeropoeus sulcicollis*:-- Moritz & Fischer 1974: 370 (list)  
*Castanotherium sulcicollis*:-- Jeekel 2001: 30 (list, new combination).

Remarks: The type series contains at least three different species (Moritz & Fischer 1974: 370).

Types: M and F syntypes.  
 Habitat: Indonesia: Java: Palabuan; Djakarta; Kalimantan, Singkawang; Benkajang;  
 Montrado. Philippines: Luzon.  
 Deposited: ZMB 195, ZMB 495, ZMB 912, ZMB 913, ZMB 587, ZMB 588, ZMB 589, ZMB 591, ZMB 597.

***Castanotherium suspectum*** Carl, 1912  
*Castanotherium suspectum* Carl, 1912: 109 (first description)  
*Castanotherium suspectum*:-- Attems 1914: 150 (list)  
*Castanotherium suspectum*:-- Chamberlin 1920: 90 (list)  
*Castanotherium suspectum*:-- Jeekel 2001: 30 (list).

Remarks: According to Carl (1912: 109) potentially the unknown female of *C. distinctum*.

Types: F holotype (damaged).  
 Habitat: Indonesia: Sulawesi, Mpane, Gulf of Tontini, Central Sulawesi.  
 Deposited: MHNG.

***Castanotherium tivium*** (Chamberlin, 1945)  
*Zephronia tivia* Chamberlin, 1945: 2 (first description)  
*Castanotherium tivium*:-- Jeekel 2001: 30 (list, new combination).

Types: M holotype.  
 Habitat: Indonesia: Sumatra, Lamprongs, Wai Lima.  
 Deposited: AMNH.

***Castanotherium tricollis*** (Karsch, 1881)  
*Sphaeropoeus tricollis* Karsch, 1881: 32 (first description)  
*Zephronia tricollis*:-- Preudhomme de Borre 1884: 25 (list)  
*Sphaeropoeus tricollis*:-- Tömösváry 1885: 68 (new locality)  
*Sphaeropoeus tricollis*:-- Attems 1914: 144 (list)  
*Sphaeropoes* [sic!] *tricollis*:-- Wang 1967: 484 (list)  
*Sphaeropoeus tricollis*:-- Moritz & Fischer 1974: 370 (list)  
*Castanotherium tricollis*:-- Jeekel 2001: 30 (list, new combination).

Types: 16 M, 7 F syntypes (Moritz & Fischer 1974: 370).  
 Habitat: Indonesia: Sumatra: Lahat; Tibingtingi; Java.  
 Deposited: ZMB 574, ZMB 914, ZMB 2191.

***Castanotherium variegatum*** (Attems, 1943)  
*Pulusphaera variegata* Attems, 1943: 68 (first description)  
*Pulusphaera variegata*:-- Wang 1967: 485 (list)  
*Castanotherium variegatum*:-- Jeekel 2001: 30 (list, new combination).

Types: M holotype.  
 Habitat: Sarawak: Baram distr.  
 Deposited: NHMW 2228 (Stagl & Schiller, in prep.).

***Castanotherium volzi*** (Carl, 1906)  
*Sphaeropoeus volzi* Carl, 1906: 233 (first description)  
*Castanotherium volzi*:-- Attems 1914: 151 (list).  
*Castanotherium volzi*:-- Jeekel 2001: 30 (list).

Types: M and F syntypes.  
 Habitat: Indonesia: Sumatra, Palembang; Indragiri, Lahat.  
 Deposited: MHNG.

***Castanotherium whiteheadi*** Pocock, 1895  
*Castanotherium whiteheadi* Pocock, 1895: 414 (first description)  
*Castanotherium whiteheadi*:-- Attems 1914: 151 (list)  
*Castanotherium whiteheadi*:-- Jeekel 2001: 30 (list).

Type: Holotype of unknown sex.  
 Habitat: North Borneo: Kina Balu.  
 Deposited: NHML (online catalogue).

### ***Castanotheroides* Chamberlin, 1921**

*Castanotheroides* Chamberlin, 1921: 61 (first description);  
 Wang 1951: 14 (list); Wang 1961: 102 (list); Jeekel 1971: 24 (list); Jeekel 1974: 46 (classification); Hoffman 1976: 120 (list); Hoffman 1980: 64 (list); Jeekel 2001: 30 (list, re-definition).

#### **Synonyms:**

---- *Luzonosphaera* Wang, 1951: 14, synonymized with *Castanotheroides* by Jeekel 2001: 30. Wang 1961: 103; Jeekel 1971: 26; Jeekel 1974: 46; Hoffman 1976: 120; Hoffman 1980: 64; Mauriès 2001: 141.

**Type-species:** *Luzonosphaera philippina* Wang, 1951.

**Description:** Anterior and posterior telopods apparently similar to *Castanotherium*, but antennomere 6 cylindrical and in both sexes with only four apical cones.

**Type-species:** *Castanotherium porosum* Pocock.

#### **Species included (3)**

*Castanotheroides philippinus* (Wang, 1951) (Philippines)  
*Castanotheroides porosus* (Pocock, 1895) (Philippines)  
*Castanotheroides sinuatus* (Butler, 1872) (Borneo)

***Castanotheroides philippinus*** (Wang, 1951)  
*Luzonosphaera philippina* Wang, 1951: 15 (first description).



*Luzonosphaera philippina*:-- Wang 1961: 103 (descrip.)  
*Castanotheroides philippinus*:-- Jeekel 2001: 31 (list, new combination).

Types: M holotype, 1 M and 1 F paratypes.  
 Habitat: Philippines: Luzon: Mt. Makiling.  
 Deposited: Unknown.

*Castanotheroides porosus* (Pocock, 1895)  
*Castanotherium porosum* Pocock, 1895: 414 (first description)  
*Castanotherium porosum*:-- Attems 1914: 150 (list)  
*Castanotheroides porosus*:-- Chamberlin 1921: 61 (list)  
*Castanotheroides porosus*:-- Wang 1951: 14 (list)  
*Castanotheroides porosus*:-- Wang 1961: 102 (list)  
*Castanotheroides porosus*:-- Jeekel 2001: 31 (list).

Types: Syntypes of unknown sex.  
 Habitat: Philippines.  
 Deposited: NHML (Online Catalogue), unclear of types.

*Castanotheroides sinuatus* (Butler, 1872)  
*Sphaerotherium sinuatum* Butler, 1872: 359 (first descrip.)  
*Sphaerotherium sinuatum*:-- Butler 1873: 174 (list)  
*Sphaerotherium sinuatum*:-- Preudhomme de Borre 1884: 28 (list)  
*Sphaerotherium sinuatum*:-- Attems 1914: 141 (list)  
*Castanotheroides sinuatus*:-- Jeekel 2001: 31 (list, new combination).

Types: Holotype of unknown sex.  
 Habitat: Sarawak.  
 Deposited: NHML.

### *Sechelliosoma* Mauriès, 1980

*Sechelliosoma* Mauriès, 1980: 164 (subgenus of *Cyliosomella*); Golovatch & Korsos 1992: 2 (new localities); Shelley et al. 2000: 13 (list); Mauriès 2001: 141 (list); Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis).

**Description:** Anterior and posterior telopods with three podomeres distal to syncoxite, both pairs strongly elongated and slender. Antennomere 6 cylindrical, disc with only four apical cones. Mandible inner tooth only consisting of two combs. <20 mm long.

**Type-species:** *Sphaerotherium forcipatum* Brölemann, 1896.

### **Monotypic**

*Sechelliosoma forcipatum* (Brölemann, 1896)  
*Sphaerotherium forcipatum* Brölemann, 1896: 529 (first description)  
*Cyliosomella (Sechelliosoma) forcipatum* [sic!]:-- Mauriès 1980: 164 (new subgenus, new localities)  
*Sechelliosoma forcipatum*:-- Golovatch & Korsos 1992: 2 (raised to genus)  
*Sechelliosoma forcipatum*:-- Wesener & VandenSpiegel 2009: 548 (phylogenetic analysis)  
*Sechelliosoma forcipatum*:-- Golovatch & Gerlach 2010: 387 (key).

Types: 1 M, 6 F syntypes.  
 Habitat: Seychelles: Mahé, Silhouette, Félicité, Marianne.  
 Deposited: MNHN.

### **Subfamily Rajasphaerinae Hoffman**

Hoffman, 1976: 120; Hoffman 1980: 64; Jeekel 2001: 31; Mauriès 2001: 141.

Remark: A subfamily Rajasphaerinae was mentioned by Verhoeff (1937) but was never diagnosed (Jeekel 2001).

### **Genus *Rajasphaera* Attems, 1935**

*Rajasphaera* Attems, 1935: 126 (first description); Attems 1943: 62 (list); Jeekel 1971: 28 (list); Jeekel 1974: 46 (classification); Hoffman 1976: 12 (redescription); Hoffman 1980: 64 (list); Jeekel 2001: 31 (list); Mauriès 2001: 141 (list).

**Description:** Anterior telopod apparently with three podomeres distal to syncoxite. Posterior telopods unique, telopoditomere 1 massively enlarged and swollen, while telopoditomere 2 is also quite large, with the immovable finger almost fused to its basal parts. Telopoditomere 3 very slender. Male gonopore located almost mesally instead of posteriorly. Antennomere 6 strongly axe-shaped. Up to 50 mm long.

**Type-species:** *Rajasphaera montana* Attems.

### **Monotypic**

*Rajasphaera montana* Attems, 1935  
*Rajasphaera montana* Attems, 1935: 132 (first description)  
*Rajasphaera montana*:-- Hoffman 1976: 121 (redescription)  
*Rajasphaera montana*:-- Jeekel 2001: 31 (list)  
**NOT** *Sphaeropoeus montanus* Karsch, 1881: 31, now *Zephronia montana*.

Types: M holotype (telopods missing).  
Habitat: Indonesia: Kalimantan, Mt. Raja.  
Deposited: ZMB.

### **Nomina dubia of the Zephroniidae**

*Sphaerotherium nebulosum* Butler, 1875  
*Sphaerotherium nebulosum* Butler, 1875: 165 (first description)  
*Sphaerotherium nebulosum*:— Preudhomme de Borre 1884: 27 (list)

Types: 1 holotype of unknown sex.  
Locality: Mongolia (?)  
Deposited: NHML (presumably lost).

### **Family Sphaerotheriidae Brandt, 1833**

Sphaerotheriidae Brölemann 1913: 79 (first separation of the Sphaerotheriida into Sphaerotheriidae and 'Sphaeropoeidae'); Attems 1914: 140 (list); Jeekel 1974: 45 (classification); VandenSpiegel et al. 2002: 143 (revision); Wesener & VandenSpiegel, 2009: 561 (morphological phylogenetic analysis); Wesener et al. 2010b: 1186 (molecular phylogenetic analysis); Wesener et al. 2011: 967 (stridulation)

Remarks: Before 2009 (Wesener & VandenSpiegel) the family Sphaerotheriidae was a paraphyletic group containing the genera Procyliosomatidae, Cyliosomatidae and Arthrosphaeridae in addition to the current species.

#### **Genera included (2)**

*Sphaerotherium* Brandt, 1833 (eastern South Africa, Moccambique, Zimbabwe)  
*Kylindotherium* Attems, 1926 (South Africa)

**Type genus:** *Sphaerotherium* Brandt, 1833

55 species + 1 nomina dubia.

### **Genus *Sphaerotherium* Brandt, 1833**

(Figs 12A–C)

*Sphaerotherium* Brandt, 1833: 198 (first description); Brandt 1841a: 360 (new species); Brandt 1841b: 177 (new species); Koch 1847: 99 (new species); Deshayes & Milne Edwards 1838: 47 (list); Lucas 1842: 522 (new species); Newport 1844: 10 (list); Koch 1863: 40 (description); Porat 1872: 5 (new species); Butler 1873: 175 (new species); Karsch 1881: 20 (new species); Bourne 1885: 162 (description); Pocock 1895 (redefinition); Attems 1908: 423

(new species); Silvestri 1910: 191 (new species); Attems 1914: 140 (list); Attems 1926 (key); Attems 1928: 220 (new species); Attems 1934 (new species); Warren 1934: 382 (description); Lawrence 1953: 77 (list); Manton 1954: 299 (morphology); Schubart 1958: 48 (new species); Lawrence 1966: 242 (new species); Haacker 1969: 16 (behaviour); Haacker & Fuchs 1972: 191 (behaviour); Haacker 1974: 317 (behaviour); Jeekel 1974: 45 (classification); Raseroka 1975: 52 (predation); Hoffman 1980 (list); Jocque 1984: 67 (new species); Lawrence 1987: 113 (list); Alderweireldt 1997: 53 (new species); Hamer 1998: 15 (list); Jones & Jones 2000: 234 (medicine); Herbert 2000 (predation by slugs); Golovatch & Hoffman 2001: 238 (list); VandenSpiegel et al. 2002: 145 (revision); Herbert et al. 2003: 4 (medicine); Redi et al. 2005: 287 (ecology); Wesener & VandenSpiegel, 2009: 561 (morphological phylogenetic analysis); Wesener et al. 2010b: 1186 (molecular phylogenetic analysis); Wesener et al. 2011: 967 (stridulation).

#### **Synonyms:**

---- *Bournellum* de Saussure & Zehntner, 1902: 20, formally synonymized under *Sphaerotherium* by VandenSpiegel et al. 2002: 145. Jeekel 1971: 23 (list).

Type species: *Sphaerotherium retusum* Koch, 1847: 99, subsequently designated by Jeekel 1971: 23, synonymized under *Sphaerotherium dorsale* (Gervais, 1847) by Attems 1928: 227.

---- *Eubournellum* Attems, 1908: 426, synonymized by Jeekel 1971: 25, as junior synonym of *Bournellum* de Saussure & Zehntner, 1902.

Type species: *Sphaerotherium retusum* Koch, 1847: 99, subsequently designated by Jeekel 1971: 23, synonymized under *Sphaerotherium dorsale* (Gervais, 1847) by Attems 1928: 227.

---- *Natalobelum* Verhoeff, 1924: 59 synonymized with *Sphaerotherium* by VandenSpiegel et al. 2002: 145. Jeekel 1971: 27 (list).

Type species: *Sphaerotherium punctulatum* Brandt, 1841, by monotypy.

---- *Neobournellum* Attems, 1908: 426, synonymized with *Sphaerotherium* by VandenSpiegel et al. 2002: 145.

Type species: *Bournellum trichopygum* (Attems, 1908: 424), by monotypy, synonymized under *Sphaerotherium compressum* Brandt, 1833: 198 by VandenSpiegel et al. 2002: 151.

---- *Oligaspis* Wood, 1865: 173 (first description), synonymized with *Sphaerotherium* by VandenSpiegel et al. 2002: 145. Jeekel 1971: 27 (list).

Type species: *Oligaspis punctipes* Wood, 1865, by monotypy, synonymized under *Sphaerotherium rotundatum* Brandt, 1833: 198 by VandenSpiegel et al. 2002: 168.

---- *Tetraconosoma* Verhoeff, 1924: 57, synonymized with *Sphaerotherium* by VandenSpiegel et al. 2002: 145. Jeekel 1971: 29 (list).

Type species: *Sphaerotherium weberii* Silvestri, 1910, by subsequent designation by Jeekel 1971: 29.

**Description**: See family key above.

**Type species**: *Sphaerotherium rotundatum* Brandt, 1833 by subsequent designation of Pocock, 1895: 410.

#### Included species (54)

*Sphaerotherium alticola* Schubart, 1958  
*Sphaerotherium apicale* Silvestri, 1910  
*Sphaerotherium boerium* Silvestri, 1910  
*Sphaerotherium capense* Schubart, 1958  
*Sphaerotherium cinctellum* Silvestri, 1910  
*Sphaerotherium civicum* Attems, 1928  
*Sphaerotherium commune* Attems, 1928  
*Sphaerotherium compressum* Brandt, 1833  
*Sphaerotherium coniferum* Silvestri, 1910  
*Sphaerotherium convexitarsum* Silvestri, 1910  
*Sphaerotherium dicrothrix* Attems, 1928  
*Sphaerotherium dinogonum* Silvestri, 1910  
*Sphaerotherium dorsale* (Gervais, 1847)  
*Sphaerotherium dorsaloide* Silvestri, 1910  
*Sphaerotherium elongatum* Brandt, 1833  
*Sphaerotherium eremita* Attems, 1928  
*Sphaerotherium eucalyptophilum* Schubart, 1958  
*Sphaerotherium fulvum* Schubart, 1958  
*Sphaerotherium giganteum* Porat, 1872  
*Sphaerotherium granulatum* Pocock, 1895  
*Sphaerotherium hanstroemi* Schubart, 1958  
*Sphaerotherium intermedium* Porat, 1872  
*Sphaerotherium kitharistes* Attems, 1928  
*Sphaerotherium krugeri* Lawrence, 1966  
*Sphaerotherium lichtensteinii* Brandt, 1833  
*Sphaerotherium mahaium* Schubart, 1958  
*Sphaerotherium millepunctatum* Attems, 1928  
*Sphaerotherium modestum* Attems, 1928  
*Sphaerotherium narcissae* Alderweireldt, 1997  
*Sphaerotherium nigratarse* Schubart, 1958  
*Sphaerotherium obtusum* C. L. Koch, 1847  
*Sphaerotherium perbrincki* Schubart, 1958  
*Sphaerotherium permodestum* Silvestri, 1910  
*Sphaerotherium pinnatum* Schubart, 1958  
*Sphaerotherium plagiarium* Silvestri, 1910  
*Sphaerotherium punctatum* Brandt, 1833  
*Sphaerotherium punctulatum* Brandt, 1841  
*Sphaerotherium rotundatum* Brandt, 1833  
*Sphaerotherium rudebecki* Schubart, 1958  
*Sphaerotherium rugulosum* Brandt, 1841  
*Sphaerotherium selindum* Alderweireldt, 1997  
*Sphaerotherium similare* Schubart, 1958  
*Sphaerotherium solitarium* Attems, 1928  
*Sphaerotherium spinatum* Silvestri, 1910  
*Sphaerotherium steppense* Schubart, 1958

*Sphaerotherium subdorsale* Silvestri, 1910  
*Sphaerotherium submite* Silvestri, 1910  
*Sphaerotherium tenuitarse* Silvestri, 1910  
*Sphaerotherium tomentosum* Schubart, 1958  
*Sphaerotherium transambeziacum* Jocque, 1984  
*Sphaerotherium tuberosum* Attems, 1928  
*Sphaerotherium tztzikamum* Schubart, 1958  
*Sphaerotherium weberii* Silvestri, 1910  
*Sphaerotherium zuluense* Schubart, 1958

***Sphaerotherium alticola*** Schubart, 1958  
*Sphaerotherium (Tetraconosoma) alticola* Schubart, 1958: 69 (first description)  
*Sphaerotherium (Tetraconosoma) alticola*:-- Hamer 1998: 15 (list)  
*Sphaerotherium alticola*:-- VandenSpiegel et al. 2002: 174 (list).

Types: F holotype.

Habitat: Lesotho: Mt. Morosi, 15 miles NE Quthing, top plateau.

Deposited: MZLU.

***Sphaerotherium apicale*** Silvestri, 1910  
*Sphaerotherium apicale* Silvestri, 1910: 217 (first description)  
*Sphaerotherium apicale*:-- Attems 1928: 229 (list)  
*Sphaerotherium (Sphaerotherium) apicale*:-- Schubart 1958: 93 (list)  
*Sphaerotherium apicale*:-- Lawrence 1966: 242 (list)  
*Sphaerotherium (Sphaerotherium) apicale*:-- Hamer 1998: 15 (list)  
*Sphaerotherium apicale*:-- VandenSpiegel et al. 2002: 174 (list).

Types: M holotype.

Habitat: Mozambique: Maputo.

Deposited: IEPN or ZMUH.

***Sphaerotherium boerium*** Silvestri, 1910  
*Sphaerotherium boerium* Silvestri, 1910: 219 (first description)  
*Sphaerotherium boerium*:-- Attems 1928: 229 (list)  
*Sphaerotherium (Sphaerotherium) boerium*:-- Schubart 1958: 93 (list)  
*Sphaerotherium (Sphaerotherium) boerium*:-- Hamer 1998: 15 (list)  
*Sphaerotherium boerium*:-- VandenSpiegel et al. 2002: 174 (list).

Types: M holotype.

Habitat: South Africa: Gauteng: Pretoria.

Deposited: IEPN.



***Sphaerotherium capense*** Schubart, 1958

*Sphaerotherium (Tetraconosoma) capense* Schubart, 1958: 48 (first description)

*Sphaerotherium (Tetraconosoma) capense*:-- Hamer 1998: 15 (list)

*Sphaerotherium capense*:-- VandenSpiegel et al. 2002: 174 (list)

*Sphaerotherium capense*:-- Pryke & Samways 2010: 251 (ecology)

---- *Sphaerotherium monticola* Pocock, 1895: 410 (first description), synonymy under *S. capense* proposed in Schubart 1958: 50

*Sphaerotherium monticola*:-- Attems 1928: 236 (list)

*Sphaerotherium monticola*:-- Schubart 1958: 101 (list)

*Sphaerotherium monticola*:-- VandenSpiegel et al. 2002: 180 (list).

Types: M holotype, 1 F paratype.

Habitat: South Africa: W. Cape: Table Mtn, Blinkwater Ravine.

Deposited: MZLU.

***Sphaerotherium cinctellum*** Silvestri, 1910

*Sphaerotherium cinctellum* Silvestri, 1910: 191 (first description)

*Sphaerotherium cinctellum*:-- Attems 1928: 222 (description)

*Sphaerotherium cinctellum*:-- Attems 1937: 464 (description)

*Sphaerotherium (Tetraconosoma) cinctellum*:-- Schubart 1958: 86 (description)

*Sphaerotherium cinctellum*:-- Haacker & Fuchs 1972: 191 (behaviour)

*Sphaerotherium cinctellum*:-- Lawrence 1987: 113 (list)

*Sphaerotherium (Tetraconosoma) cinctellum*:-- Hamer 1998: 16 (list)

*Sphaerotherium cinctellum*:-- VandenSpiegel et al. 2002: 174 (list)

*Sphaerotherium cinctellum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)

Types: F holotype.

Habitat: South Africa: W. Cape: Knysna.

Deposited: IEPN.

***Sphaerotherium civicum*** Attems, 1928

*Sphaerotherium civicum* Attems, 1928: 231 (first descrip.)

*Sphaerotherium (Sphaerotherium) civicum*:-- Schubart 1958: 88 (list);

*Sphaerotherium (Sphaerotherium) civicum*:-- Hamer 1998: 16 (list)

*Sphaerotherium civicum*:-- VandenSpiegel et al. 2002: 174 (list).

Types: M and F syntypes.

Habitat: South Africa: E. Cape: Burgersdorp.

Deposited: SAMC, NHMW 3953 (Stagl & Schiller, in prep.).

***Sphaerotherium commune*** Attems, 1928

*Sphaerotherium commune* Attems, 1928: 218 (first description)

*Sphaerotherium (Tetraconosoma) commune*:-- Schubart 1958: 58 (list)

*Sphaerotherium (Tetraconosoma) commune*:-- Hamer 1998: 16 (list)

*Sphaerotherium commune*:-- VandenSpiegel et al. 2002: 174 (list).

Types: Numerous M and F syntypes.

Habitat: South Africa, numerous localities, no type locality specified.

Deposited: SAMC; NHMW 2199 (Stagl & Schiller, in prep.).

***Sphaerotherium compressum*** Brandt, 1833

*Sphaerotherium compressum* Brandt. 1833: 198 (first description)

*Zephronia compressa*:-- Gervais: 1837: 9 (list)

*Zephronia compressa*:-- Deshayes & Milne Edwards 1838: 47 (list)

*Sphaerotherium compressum*:-- Brandt 1841a: 360 (description)

*Sphaerotherium compressum*:-- Brandt 1841b: 176 (description)

*Zephronia compressa*:-- Lucas 1842: 521 (description)

*Zephronia compressa*:-- Gervais 1847: 77 (description)

*Sphaerotherium compressum*:-- Koch 1847: 99 (list)

*Sphaerotherium compressum*:-- Koch 1863: 45 (descrip.)

*Sphaerotherium compressum*:-- Butler 1873: 175 (list)

*Sphaerotherium compressum*:-- Preudhomme de Borre 1884: 26 (list)

*Sphaerotherium compressum*:-- Silvestri 1910: 199 (description)

*Sphaerotherium compressum*:-- Moritz & Fischer 1973: 368 (list)

*Sphaerotherium compressum*:-- Golovatch & Hoffman 2001: 238 (list)

*Sphaerotherium compressum*:-- VandenSpiegel et al. 2002: 151 (redescription)

*Sphaerotherium compressum*:-- Wesener & VandenSpiegel 2009: 548 (morpholog. phylogenetic analysis)

---- *Sphaerotherium Klugii* [sic!] Brandt, 1841a: 361 (first description), synonymized with *S. compressum* by VandenSpiegel et al. 2002: 151

*Sphaerotherium Klugii* [sic!]:-- Brandt 1841 b: 177 (description)

*Zephronia Klugii* [sic!]:-- Gervais 1847: 79 (description)  
*Sphaerotherium klugii*:-- Butler 1873: 176 (description)  
*Sphaerotherium Klugii* [sic!]:-- Preudhomme de Borre 1884: 27 (list)  
*Sphaerotherium compressum klugii*:-- Silvestri 1910: 201 (description)  
*Sphaerotherium klugii*:-- Golovatch & Hoffman 2001: 238 (list)  
 ---- *Sphaerotherium repulsum* Karsch, 1881: 28 (first description), synonymized with *S. compressum* by VandenSpiegel et al. 2002: 151  
*Sphaerotherium repulsum*:-- Moritz & Fischer 1973: 369 (list)  
 ---- *Bournellum trichopygum* Attems, 1908: 424 (first description), synonymized with *S. compressum* by VandenSpiegel et al. 2002: 151  
*Sphaerotherium trichopygum*:-- Attems 1928: 221 (description)  
*Sphaerotherium trichopygum*:-- Moritz & Fischer 1973: 370 (list)  
*Sphaerotherium (Tetraconosoma) trichopygum*:-- Schubart, 1958: 56 (description)  
*Sphaerotherium (Tetraconosoma) trichopygum*:-- Hamer 1998: 19 (list)  
 ---- *Sphaerotherium ancillare* Attems, 1928: 225 (first description), synonymized with *S. compressum* by VandenSpiegel et al. 2002: 151  
*Sphaerotherium (Tetraconosoma) ancillare*:-- Schubart 1958: 86 (list)  
*Sphaerotherium (Tetraconosoma) ancillare*:-- Hamer 1998: 15 (list).

Types: M lectotype (designated by VandenSpiegel et al. 2002: 151), 2 F paratypes.

Habitat: South Africa: 'Promontorium Bonae Spei' (Cape).

Deposited: Lectotype and 1 paratype, ZMB 62; 1 paratype ZISP.

***Sphaerotherium coniferum* Silvestri, 1910**

*Sphaerotherium coniferum* Silvestri, 1910: 213 (first description)  
*Sphaerotherium coniferum*:-- Attems 1928: 230 (description)  
*Sphaerotherium (Sphaerotherium) coniferum*:-- Schubart 1958: 93 (list)  
*Sphaerotherium (Sphaerotherium) coniferum*:-- Hamer 1998: 16 (list)  
*Sphaerotherium coniferum*:-- VandenSpiegel et al. 2002: 175 (list).

Types: F holotype.

Habitat: Mozambique: Maputo.

Deposited: IEPN or ZMUH.

***Sphaerotherium convexitarsum* Silvestri, 1910**

*Sphaerotherium convexitarsum* Silvestri, 1910: 198 (first description)  
*Sphaerotherium convexitarsum*:-- Attems 1928: 217 (list)  
*Sphaerotherium (Tetraconosoma) convexitarsum*:-- Schubart 1958: 50 (list)  
*Sphaerotherium (Tetraconosoma) convexitarsum*:-- Hamer 1998: 16 (list)  
*Sphaerotherium convexitarsum*:-- VandenSpiegel et al. 2002: 175 (list)  
*Sphaerotherium convexitarsum*:-- Wesener et al. 2011: 967 (stridulation behaviour).

Types: M and F syntypes.

Habitat: South Africa: E. Cape: Port Elizabeth.

Deposited: IEPN.

***Sphaerotherium dicrothrix* Attems, 1928**

*Sphaerotherium dicrothrix* Attems, 1928: 232 (first description)  
*Sphaerotherium (Sphaerotherium) dicrothrix* [sic!]:-- Schubart 1958: 87 (list)  
*Sphaerotherium (Sphaerotherium) dicrothrix*:-- Hamer 1998: 16 (list)  
*Sphaerotherium dicrothrix*:-- VandenSpiegel et al. 2002: 175 (list).

Types: M and F syntypes.

Habitat: South Africa: LP: Acomhoek.

Deposited: SAMC, NHMW 2200 (Stagl & Schiller, in prep.).

***Sphaerotherium dinogonum* Silvestri, 1910**

*Sphaerotherium dinogonum* Silvestri, 1910: 210 (first description)  
*Sphaerotherium dinogonum*:-- Attems 1928: 226 (list)  
*Sphaerotherium (Sphaerotherium) dinogonum*:-- Schubart 1958: 94 (list)  
*Sphaerotherium (Sphaerotherium) dinogonum*:-- Hamer 1998: 16 (list)  
*Sphaerotherium dinogonum*:-- VandenSpiegel et al. 2002: 175 (list).

Types: M and F syntypes.

Habitat: South Africa: W. Cape: Knysna.

Deposited: IEPN.

***Sphaerotherium dorsale* (Gervais, 1847)**

*Zephronia dorsalis* Gervais, 1847: 79 (first description)  
*Sphaerotherium dorsale*:-- Porat 1872: 5 (description)  
*Sphaerotherium dorsale*:-- Preudhomme de Borre 1884: 26 (list)

*Sphaerotherium dorsale*:-- Silvestri 1910: 205 (descrip.)  
*Sphaerotherium dorsale*:-- Attems 1928: 227 (description)  
*Sphaerotherium dorsale*:-- Attems 1934: 464 (description)  
*Sphaerotherium dorsale*:-- Lawrence 1953: 77 (list)  
*Sphaerotherium dorsale*:-- Lawrence 1987: 110 (list)  
*Sphaerotherium dorsale*:-- Manton 1954: 299 (description)  
*Sphaerotherium dorsale*:-- Schubart 1958: 98 (description)  
*Sphaerotherium dorsale*:-- Haacker 1968: 454 (behaviour)  
*Sphaerotherium dorsale*:-- Haacker & Fuchs 1972: 192 (behaviour)  
*Sphaerotherium dorsale*:-- Hamer 1998: 16 (list)  
*Sphaerotherium dorsale*:-- VandenSpiegel et al. 2002: 154 (redescription)  
*Sphaerotherium dorsale*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)  
*Sphaerotherium dorsale*:-- Wesener et al. 2011: 967 (stridulation behaviour)  
*Sphaerotherium dorsale*:-- Armstrong & Hamer 2015: 153 (list)  
 ---- *Zephronia puvereae* White, 1859: 405 (first descrip.), synonymized with *S. dorsale* by Schubart 1958: 98.  
 ---- *Sphaerotherium retusum* Koch, 1847: 99 (first description), synonymized with *S. dorsale* by Attems 1928: 227  
*Sphaerotherium retusum*:-- Koch 1863: 42 (description)  
*Sphaerotherium retusum*:-- Bourne 1885: 162 (descrip.)  
*Bournellum retusum*:-- De Saussure & Zehntner 1902: 22 (description).

Types: F holotype.  
 Habitat: Unknown.  
 Deposited: MNHN.

***Sphaerotherium dorsaloide*** Silvestri, 1910  
*Sphaerotherium dorsaloide* Silvestri, 1910: 189 (first description)  
*Sphaerotherium dorsaloide*:-- Attems 1928: 225 (descrip.)  
*Sphaerotherium dorsaloide*:-- Lawrence 1953: 88 (description)  
*Sphaerotherium (Tetraconosoma) dorsaloide*:-- Schubart 1958: 80 (description)  
*Sphaerotherium (Tetraconosoma) dorsaloide*:-- Hamer 1998: 16 (list)  
*Sphaerotherium dorsaloide*:-- VandenSpiegel et al. 2002: 175 (list)  
*Sphaerotherium dorsaloide*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)  
*Sphaerotherium dorsaloide*:-- Wesener et al. 2011: 967 (stridulation behaviour)  
*Sphaerotherium dorsaloide* [sic!]:-- Armstrong & Hamer 2015: 153 (list).

Types: M and F syntypes.  
 Habitat: South Africa: W. Cape: Knysna.  
 Deposited: IEPN.

***Sphaerotherium elongatum*** Brandt, 1833  
*Sphaerotherium elongatum* Brandt, 1833: 199 (first description)  
*Zephronia elongata*:-- Gervais 1837: 9 (list)  
*Zephronia elongata*:-- Gervais 1847: 80 (description)  
*Zephronia elongata*:-- Deshayes & Milne Edwards 1838: 47 (list)  
*Sphaerotherium elongatum*:-- Brandt 1841a: 362 (description)  
*Sphaerotherium elongatum*:-- Brandt 1841b: 178 (description)  
*Zephronia elongata*:-- Lucas 1842: 522 (description)  
*Sphaerotherium elongatum*:-- Newport 1844: 10 (list)  
*Sphaerotherium elongatum*:-- Koch 1847: 98 (list)  
*Sphaerotherium elongatum*:-- Koch 1863: 32 (description)  
*Sphaerotherium elongatum*:-- Butler 1873: 176 (list)  
*Sphaerotherium elongatum*:-- Preudhomme de Borre 1884: 26 (list)  
*Sphaerotherium elongatum*:-- Moritz & Fischer 1973: 368 (list)  
*Sphaerotherium elongatum*:-- Golovatch & Hoffman 2001: 238 (list)  
*Sphaerotherium elongatum*:-- VandenSpiegel et al. 2002: 156 (redescription)  
 ---- *Sphaerotherium microstictum* Brandt, 1841a: 362 (first description), synonymized under *S. elongatum* by VandenSpiegel et al. 2002: 156  
*Sphaerotherium microstictum*:-- Brandt 1841b: 178 (description)  
*Zephronia microsticta*:-- Gervais 1847: 80 (description)  
*Sphaerotherium microstictum*:-- Butler 1873: 173 (description)  
*Sphaerotherium microstictum*:-- Preudhomme de Borre 1884: 27 (list)  
*Sphaerotherium microstictum*:-- Golovatch & Hoffman 2001: 239 (list)  
*Sphaerotherium microstictum*:-- VandenSpiegel et al. 2002: 156 (synonymization).  
 ---- *Sphaerotherium insulanum* Karsch, 1881: 30 (first description), synonymized under *S. elongatum* by Wesener & Wägele 2008: 79  
*Sphaerotherium insulanum*:-- Preudhomme de Borre 1884: 26 (list)  
*Sphaerotherium insulanum*:-- Jeekel 1999: 14 (list).

Types: M lectotype, 4 F paralectotype (designated by VandenSpiegel et al. 2002: 156).  
 Habitat: South Africa: 'Caput Bonae Spei' (Cape).  
 Deposited: Lectotype and 2 paralectotypes ZMB 60, 1 paralectotype ZMB 59, 1 paralectotype ZISP.

***Sphaerotherium eremita*** Attems, 1928  
*Sphaerotherium eremita* Attems, 1928: 229 (first description)



*Sphaerotherium (Sphaerotherium) eremita*:-- Schubart 1958: 93 (list)  
*Sphaerotherium (Sphaerotherium) eremita*:-- Hamer 1998: 17 (list)  
*Sphaerotherium eremita*:-- VandenSpiegel et al. 2002: 176 (list).

Types: F holotype.

Habitat: South Africa: W. Cape: Table Mtn, Newlands.  
 Deposited: SAMC; NHMW 72/229 (Stagl & Schiller, in prep.).

***Sphaerotherium eucalyptophilum*** Schubart, 1958  
*Sphaerotherium (Tetraconosoma) eucalyptophilum* Schubart, 1958: 60 (first description)  
*Sphaerotherium (Tetraconosoma) eucalyptophilum*:-- Hamer 1998: 17 (list)  
*Sphaerotherium eucalyptophilum*:-- VandenSpiegel et al. 2002: 176 (list).

Types: M holotype, 1 F paratype.

Habitat: South Africa: LP: Soutpansberg, Punch Bowl 1.6 miles NNE Louis Trichardt.  
 Deposited: MZLU.

***Sphaerotherium fulvum*** Schubart, 1958  
*Sphaerotherium (Tetraconosoma) fulvum* Schubart, 1958: 67 (first description)  
*Sphaerotherium (Tetraconosoma) fulvum*:-- Hamer 1998: 17 (list)  
*Sphaerotherium fulvum*:-- VandenSpiegel et al. 2002: 176 (list).

Types: M holotype.

Habitat: South Africa: E. Cape: Zuurberg Pass, 15 miles N Addo.  
 Deposited: MZLU.

***Sphaerotherium giganteum*** Porat, 1872 (Fig. 12A)  
*Sphaerotherium giganteum* Porat, 1872: 8 (first descrip.)  
*Sphaerotherium giganteum*:-- Preudhomme de Borre 1884: 26 (list)  
*Sphaerotherium giganteum*:-- Silvestri 1910: 212 (description)  
*Sphaerotherium giganteum*:-- Attems 1928: 235 (description)  
*Sphaerotherium giganteum*:-- Attems 1934: 465 (description)  
*Sphaerotherium giganteum*:-- Manton 1954: 299 (list)  
*Sphaerotherium giganteum*:-- Lawrence 1953: 44 (list)  
*Sphaerotherium giganteum*:-- Lawrence 1954: 170 (list)

*Sphaerotherium (Sphaerotherium) giganteum*:-- Schubart 1958: 92 (list)  
*Sphaerotherium giganteum*:-- Lawrence 1987: 109 (description)  
*Sphaerotherium giganteum*:-- Haacker & Fuchs 1972: 192 (behaviour)  
*Sphaerotherium (Sphaerotherium) giganteum*:-- Hamer 1998: 17 (list)  
*Sphaerotherium giganteum*:-- Herbert 2000: 2 (prey of slugs)  
*Sphaerotherium giganteum*:-- VandenSpiegel et al. 2002: 158 (redescription)  
*Sphaerotherium giganteum*:-- Redi et al. 2005: 287 (ecology)  
*Sphaerotherium giganteum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)  
*Sphaerotherium giganteum*:-- Armstrong & Hamer 2015: 153 (list).

Types: F lectotype, 1 F paralectotype (designated by VandenSpiegel et al. 2002: 158).

Habitat: South Africa: 'Cafraria'.

Deposited: SMNH.

***Sphaerotherium granulatatum*** Pocock, 1895  
*Sphaerotherium granulatatum* Pocock, 1895: 410 (first description)  
*Sphaerotherium granulatatum*:-- Silvestri 1910: 196 (description)  
*Sphaerotherium granulatatum*:-- Attems 1928: 217 (description)  
*Sphaerotherium (Tetraconosoma) granulatatum*:-- Schubart 1958: 50 (list)  
*Sphaerotherium (Tetraconosoma) granulatatum*:-- Hamer 1998: 17 (list)  
*Sphaerotherium granulatatum*:-- VandenSpiegel et al. 2002: 176 (list).

Types: Syntypes of unknown number and sex.

Habitat: South Africa: E. Cape: Port Elizabeth.

Deposited: NHML (Online Catalogue).

***Sphaerotherium hanstroemi*** Schubart, 1958  
*Sphaerotherium (Tetraconosoma) hanströmi* [sic!] Schubart, 1958: 62 (first description)  
*Sphaerotherium (Tetraconosoma) hanstromi* [sic!]:-- Hamer 1998: 17 (list)  
*Sphaerotherium hanstroemi*:-- VandenSpiegel et al. 2002: 176 (list)  
*Sphaerotherium hanstroemi*:-- Wesener et al. 2011: 967 (stridulation behaviour)  
*Sphaerotherium hanstromi* [sic!]:-- Armstrong & Hamer 2015: 153 (list).

Types: M holotype, 4 F paratypes.

Habitat: South Africa: KZN: Pietermaritzburg, Town Bush.

Deposited: MZLU.

***Sphaerotherium intermedium*** Porat, 1872

*Sphaerotherium intermedium* Porat, 1872: 8 (first description)

*Sphaerotherium intermedium*:-- Preudhomme de Borre 1884: 26 (list)

*Sphaerotherium intermedium*:-- Silvestri 1910: 202 (description)

*Sphaerotherium intermedium*:-- Attems 1928: 222 (list)

*Sphaerotherium (Tetraconosoma) intermedium*:-- Schubart 1958: 50 (list)

*Sphaerotherium (Tetraconosoma) intermedium*:-- Hamer 1998: 17 (list)

*Sphaerotherium intermedium*:-- VandenSpiegel et al. 2002: 160 (redescription).

Types: F lectotype (designated by VandenSpiegel et al. 2002: 160).

Habitat: South Africa: 'Caput Bonae Spei' (Cape).

Deposited: SMNH.

***Sphaerotherium kitharistes*** Attems, 1928

*Sphaerotherium kitharistes* Attems, 1928: 216 (first description)

*Sphaerotherium (Tetraconosoma) kitharistes*:-- Schubart 1958: 78 (list)

*Sphaerotherium (Tetraconosoma) kitharistes*:-- Hamer 1998: 17 (list)

*Sphaerotherium kitharistes*:-- VandenSpiegel et al. 2002: 176 (list).

Types: 1 M, several F syntypes.

Habitat: Mozambique: Macequece.

Deposited: SAMC, NHMW 3954 (Stagl & Schiller, in prep.).

***Sphaerotherium krugeri*** Lawrence, 1966

*Sphaerotherium krugeri* Lawrence, 1966: 242 (first description)

*Sphaerotherium krugeri*:-- Hamer 1998: 17 (list)

*Sphaerotherium krugeri*:-- VandenSpiegel et al. 2002: 176 (list).

Types: Holotypes [sic!] 2 M, 3 F.

Habitat: South Africa: KNP: Gomondwane.

Deposited: NMSA 9315.

***Sphaerotherium lichtensteinii*** Brandt, 1833

*Sphaerotherium Lichtensteinii* [sic!] Brandt, 1833: 199 (first description)

*Zephronia Lichtenteinii* [sic!]:-- Gervais 1837: 9 (list)

*Zephronia Lichtenteinii*:-- Gervais 1847: 78 (description)

*Zephronia Lichtenteinii*:-- Deshayes & Milne Edwards 1838: 47 (list)

*Sphaerotherium Lichtensteinii* [sic!]:-- Brandt 1841a: 361 (description)

*Sphaerotherium Lichtensteinii* [sic!]:-- Brandt 1841b: 177 (description)

*Zephronia Lichtenteinii* [sic!]:-- Lucas 1842: 521 (description)

*Sphaerotherium Lichtensteinii* [sic!]:-- Koch 1847: 99 (list)

*Sphaerotherium Lichtensteinii* [sic!]:-- Koch 1863: 33 (description)

*Sphaerotherium lichtensteinii*:-- Butler 1873: 174 (list)

*Sphaerotherium Lichtensteinii* [sic!]:-- Preudhomme de Borre 1884: 27 (list)

*Sphaerotherium lichtensteinii*:-- Moritz & Fischer 1973: 369 (list)

*Sphaerotherium lichtensteinii*:-- Jeekel 2001: 32 (list)

*Sphaerotherium lichtensteinii*:-- Golovatch & Hoffman 2001: 239 (list)

*Sphaerotherium lichtensteinii*:-- VandenSpiegel et al. 2002: 163 (redescription)

**NOT** *Sphaerotherium Lichtensteinii* [sic!]:-- Tömösváry, 1885: 68 (list, misidentification) and

*Sphaerotherium Lichtensteinii* [sic!]:-- Daday 1889: 141 (list, misidentification).

Types: 1 F lectotype, 1 F paralectotype (designated by VandenSpiegel et al. 2002: 163).

Habitat: South Africa: 'Caput Bonae Spei' (Cape).

Deposited: lectotype ZISP, paralectotype ZMB 63.

***Sphaerotherium mahaium*** Schubart, 1958

*Sphaerotherium (Tetraconosoma) mahaium* Schubart, 1958: 54–56 (first description)

*Sphaerotherium (Tetraconosoma) mahaium*:-- Hamer 1998: 17 (list)

*Sphaerotherium mahaium*:-- VandenSpiegel et al. 2002: 177 (list)

*Sphaerotherium mahaium*:-- Wesener et al. 2011: 967 (stridulation behaviour)

*Sphaerotherium mahaium*:-- Armstrong & Hamer 2015: 153 (list).

Types: M holotype, 1 F paratype.

Habitat: South Africa: KZN: Drakensberg, RNNP, Mahai River, the Cascades.

Deposited: MZLU.

***Sphaerotherium millepunctatum*** Attems, 1928

*Sphaerotherium millepunctatum* Attems, 1928: 219 (first description)

*Sphaerotherium millepunctatum*:-- Attems 1934: 265 (description)

*Sphaerotherium (Tetraconosoma) millepunctatum*:-- Schubart 1958: 46 (list)

*Sphaerotherium (Tetraconosoma) millepunctatum*:-- Hamer 1998: 17 (list)

*Sphaerotherium millepunctatum*:-- VandenSpiegel et al. 2002: 177 (list)

*Sphaerotherium millepunctatum*:-- Armstrong & Hamer 2015: 153 (list).

Types: 1 M, 1 F syntypes.

Habitat: Mozambique: Masiene near Chai Chai.

Deposited: SAMC, NHMW 2201 (Stagl & Schiller, in prep.).

***Sphaerotherium modestum*** Attems, 1928

*Sphaerotherium modestum* Attems, 1928: 230 (first description)

*Sphaerotherium (Sphaerotherium) modestum*:-- Schubart 1958: 93 (list)

*Sphaerotherium modestum*:-- Lawrence 1966: 240 (list)

*Sphaerotherium (Sphaerotherium) modestum*:-- Hamer 1998: 17 (list)

*Sphaerotherium modestum*:-- VandenSpiegel et al. 2002: 177 (list)

*Sphaerotherium modestum*:-- Druce et al. 2007: 211 (ecology)

*Sphaerotherium modestum*:-- Druce et al. 2014a: 318 (list)

*Sphaerotherium modestum*:-- Druce et al. 2014b: 297 (list).

Types: F holotype.

Habitat: South Africa: LP: Soutpansberg Distr., 20 miles E Pietersburg.

Deposited: NHMW 72/230 (Stagl & Schiller, in prep.).

***Sphaerotherium narcissi*** Alderweireldt, 1997

*Sphaerotherium narcissi* Alderweireldt, 1997: 53 (first description)

*Sphaerotherium narcissi*:-- Hamer 1998: 18 (list)

*Sphaerotherium narcissi*:-- VandenSpiegel et al. 2002: 177 (list).

Types: M holotype, 4 paratypes of unknown sex.

Habitat: Zimbabwe: Melsetter, 64 km N Chipinga.

Deposited: MRAC.

***Sphaerotherium nigrirtarse*** Schubart, 1958

*Sphaerotherium (Tetraconosoma) nigrirtarse* Schubart, 1958: 81 (first description)

*Sphaerotherium (Tetraconosoma) nigrirtarse*:-- Hamer 1998: 18 (list)

*Sphaerotherium nigrirtarse*:-- VandenSpiegel et al. 2002: 177 (list).

Types: F holotype.

Habitat: South Africa: W. Cape: Hermanus.

Deposited: MZLU.

***Sphaerotherium obtusum*** Koch, 1847

*Sphaerotherium obtusum* Koch, 1847: 98 (first description)

*Sphaerotherium obtusum*:-- Koch 1863: 5 (description)

*Sphaerotherium obtusum*:-- Preudhomme de Borre 1884: 27 (list)

*Sphaerotherium obtusum*:-- Bourne 1885: 162 (description)

*Bournellum obtusum*:-- de Saussure & Zehntner 1902: 21 (description)

*Sphaerotherium obtusum*:-- Moritz & Fischer 1973: 369 (list)

*Sphaerotherium obtusum*:-- VandenSpiegel et al. 2002: 164 (redescription)

*Sphaerotherium obtusum*:-- Armstrong & Hamer 2015: 153 (list).

---- *Sphaerotherium grossum* Koch, 1847: 98 (first description), synonymized by VandenSpiegel et al. 2002: 164

*Sphaerotherium grossum*:-- Koch 1863: 5 (description)

*Sphaerotherium grossum*:-- Butler 1873: 176 (list)

*Sphaerotherium grossum*:-- Preudhomme de Borre 1884: 26 (list)

*Sphaerotherium grossum*:-- Moritz & Fischer 1973: 369 (list).

Types: F holotype.

Habitat: South Africa: 'Caput Bonae Spei' (Cape).

Deposited: ZMB 58.

***Sphaerotherium perbrincki*** Schubart, 1958

*Sphaerotherium (Tetraconosoma) perbrincki* Schubart, 1958: 51 (first description)

*Sphaerotherium (Tetraconosoma) perbrincki*:-- Hamer 1998: 18 (list)

*Sphaerotherium perbrincki*:-- VandenSpiegel et al. 2002: 177 (list)

*Sphaerotherium perbrincki*:-- Wesener et al. 2011: 967 (stridulation behaviour)

*Sphaerotherium perbrincki*:-- Armstrong & Hamer 2015: 153 (list).



Types: M holotype, 1 F paratype.

Habitat: South Africa: KZN: Drakensberg, RNNP, Gudu Falls area.

Deposited: MZLU.

***Sphaerotherium permodestum*** Silvestri, 1910

*Sphaerotherium permodestum* Silvestri, 1910: 214 (first description)

*Sphaerotherium permodestum*:-- Attems 1928: 23 1 (list)

*Sphaerotherium (Sphaerotherium) permodestum*:-- Schubart 1958: 94 (list)

*Sphaerotherium (Sphaerotherium) permodestum*:-- Hamer 1998: 18 (list)

*Sphaerotherium permodestum*:-- VandenSpiegel et al. 2002: 177 (list).

Types: F holotype.

Habitat: South Africa: Transvaal, no details.

Deposited: IEPN or ZMA.

***Sphaerotherium pinnatum*** Schubart, 1958

*Sphaerotherium (Tetraconosoma) pinnatum* Schubart, 1958: 76 (first description)

*Sphaerotherium (Tetraconosoma) pinnatum*:-- Hamer 1998: 18 (list)

*Sphaerotherium pinnatum*:-- VandenSpiegel et al. 2002: 177 (list).

Types: F holotype.

Habitat: Not specified.

Deposited: MZLU.

***Sphaerotherium plagiarium*** Silvestri, 1910

*Sphaerotherium plagiarium* Silvestri, 1910: 193 (first description)

*Sphaerotherium plagiarium*:-- Attems 1928: 224 (description)

*Sphaerotherium (Tetraconosoma) plagiarium*:-- Schubart 1958: 86 (list)

*Sphaerotherium (Tetraconosoma) plagiarium*:-- Hamer 1998: 18 (list)

*Sphaerotherium plagiarium*:-- VandenSpiegel et al. 2002: 178 (list).

Types: F holotype.

Habitat: South Africa: W. Cape: Knysna.

Deposited: IEPN.

***Sphaerotherium punctatum*** Brandt, 1833

*Sphaerotherium punctatum* Brandt, 1833: 199 (first description)

*Zephronia punctata*:-- Gervais 1837: 9 (list)

*Zephronia punctata*:-- Deshayes & Milne Edwards 1838: 47 (list)

*Sphaerotherium punctatum*:-- Brandt 1841a: 362 (description)

*Sphaerotherium punctatum*:-- Brandt 1841b: 179 (description)

*Zephronia punctata*:-- Lucas 1842: 522 (description)

*Sphaerotherium punctatum*:-- Newport 1844: 10 (list)

*Zephronia punctata*:-- Gervais 1847: 81 (description)

*Sphaerotherium punctatum*:-- Koch 1847: 98 (list)

*Sphaerotherium punctatum*:-- Koch 1863: 43 (descrip.)

*Sphaerotherium punctatum*:-- Butler 1873: 174 (descrip.)

*Sphaerotherium punctatum*:-- Preudhomme de Borre 1884: 27 (list)

*Sphaerotherium punctatum*:-- Moritz & Fischer 1973: 369 (list)

*Sphaerotherium punctatum*:-- Lawrence 1987: 11 (list)

*Sphaerotherium punctatum*:-- Golovatch & Hoffman 2001: 239 (list)

*Sphaerotherium punctatum*:-- VandenSpiegel et al. 2002: 166 (redescription).

---- *Sphaerotherium kochii* Butler, 1873: 177, synonymized with *S. punctatum* by Pocock 1894: 330.

*Sphaerotherium kochii*:-- Preudhomme de Borre 1884: 27 (list).

Types: 1 F lectotype, 1 F paralectotype (selected by VandenSpiegel et al. 2002: 166).

Habitat: South Africa: 'Caput Bonae Spei' (Cape).

Deposited: ZMB 56.

***Sphaerotherium punctulatum*** Brandt, 1841

*Sphaerotherium punctulatum* Brandt, 1841a: 362 (first description)

*Sphaerotherium punctulatum*:-- Brandt 1841b: 179 (description)

*Zephronia punctulata*:-- Gervais 1847: 81 (description)

*Sphaerotherium punctulatum*:-- Porat 1872: 8 (descrip.)

*Sphaerotherium punctulatum*:-- Butler 1873: 173 (descr.)

*Sphaerotherium punctulatum*:-- Preudhomme de Borre 1884: 27 (list)

*Sphaerotherium punctulatum*:-- Silvestri 1910: 216 (description)

*Natalobelum punctulatum*:-- Verhoeff 1924: 59 (type of new genus)

*Sphaerotherium punctulatum*:-- Attems 1928: 234 (description)

*Sphaerotherium punctulatum*:-- Attems 1934: 465 (description)

*Sphaerotherium punctulatum*:-- Warren 1934: 382 (description)

*Sphaerotherium (Sphaerotherium) punctulatum*:-- Schubart 1958: 91 (description)

*Sphaerotherium punctulatum*:-- Haacker & Fuchs 1972: 192 (behaviour)  
*Sphaerotherium (Sphaerotherium) punctulatum*:-- Hamer 1998: 18 (list)  
*Sphaerotherium punctulatum*:-- Jolles & Jolles 2000: 234 (medicine)  
*Sphaerotherium punctulatum*:-- Golovatch & Hoffman 2001: 239 (list)  
*Sphaerotherium punctulatum*:-- VandenSpiegel 2002: 171 (redescription)  
*Sphaerotherium punctulatum*:-- VandenSpiegel et al. 2002: 166 (list)  
*Sphaerotherium punctulatum*:-- Redi et al. 2005: 287 (ecology)  
*Sphaerotherium punctulatum*:-- Regier et al. 2005: 149 (molecular phylogenetic analysis)  
*Sphaerotherium punctulatum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)  
*Sphaerotherium punctulatum*:-- Wesener et al. 2011: 967 (stridulation behaviour)  
*Sphaerotherium punctulatum*:-- Armstrong & Hamer 2015: 153 (list).

Types: 1 M lectotype (selected by VandenSpiegel 2002: 171).

Habitat: South Africa: 'Caput Bonae Spei' (Cape).

Deposited: ZISP.

***Sphaerotherium rotundatum* Brandt, 1833**

*Sphaerotherium rotundatum* Brandt, 1833: 198 (first description)

*Zephronia rotundata*:-- Gervais 1837: 9 (list)

*Zephronia rotundata*:-- Deshayes & Milne Edwards 1838: 47 (list)

*Sphaerotherium rotundatum*:-- Brandt 1841a: 360 (description)

*Sphaerotherium rotundatum*:-- Brandt 1841b: 175 (description)

*Zephronia rotundata*:-- Lucas 1842: 521 (description)

*Zephronia rotundata*:-- Gervais 1847: 77 (description)

*Sphaerotherium rotundatum*:-- Koch 1847: 99 (list)

*Sphaerotherium rotundatum*:-- Koch 1863: 44 (description)

*Sphaerotherium rotundatum*:-- Preudhomme de Borre 1884: 28 (list)

*Sphaerotherium rotundatum*:-- Silvestri 1910: 184 (description)

*Sphaerotherium rotundatum*:-- Attems 1928: 214 (description)

*Sphaerotherium rotundatum*:-- Attems 1934: 464 (description)

*Sphaerotherium (Tetraconosoma) rotundatum*:-- Schubart 1958: 75 (list);

*Sphaerotherium rotundatum*:-- Moritz & Fischer 1973: 370 (list)

*Sphaerotherium (Tetraconosoma) rotundatum*:-- Hamer 1998: 18 (list)

*Sphaerotherium rotundatum*:-- Golovatch & Hoffman 2001: 239 (list)

*Sphaerotherium rotundatum*:-- VandenSpiegel et al. 2002: 168 (redescription)

*Sphaerotherium rotundatum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)

*Sphaerotherium rotundatum*:-- Wesener et al. 2011: 967 (stridulation behaviour)

*Sphaerotherium rotundatum*:-- Armstrong & Hamer 2015: 153 (list).

---- *Oligaspis puncticeps* Wood 1865: 73 (first description), synonymized by VandenSpiegel et al. 2002: 168.

*Oligaspis puncticeps*:-- Preudhomme de Borre 1884: 26 (list)

---- *Sphaerotherium pubescens* Porat, 1872: 7 (first description), synonymized by Silvestri 1910: 184.

*Sphaerotherium pubescens*:-- Preudhomme de Borre 1884: 27 (list)

---- *Sphaerotherium viride* Porat, 1872: 6 (first description), synonymized by Silvestri 1910: 184.

*Sphaerotherium viride*:-- Preudhomme de Borre 1884: 28 (list).

Types: F holotype.

Habitat: South Africa: 'Caput Bonae Spei' (Cape).

Deposited: ZMB 61.

***Sphaerotherium rudebecki* Schubart, 1958**

*Sphaerotherium (Sphaerotherium) rudebecki* Schubart, 1958: 88 (first description)

*Sphaerotherium (Sphaerotherium) rudebecki*:-- Hamer 1998: 18 (list)

*Sphaerotherium rudebecki*:-- VandenSpiegel et al. 2002: 178 (list)

*Sphaerotherium rudebecki*:-- Armstrong & Hamer 2015: 153 (list).

Types: M holotype, 1 F paratype.

Habitat: Lesotho: Quthing.

Deposited: MZLU.

***Sphaerotherium rugulosum* Brandt, 1841**

*Sphaerotherium rugulosum* Brandt, 1841a: 363 (first description)

*Sphaerotherium rugulosum*:-- Brandt 1841b: 179 (description)

*Zephronia rugulosa*:-- Gervais 1847: 82 (description)

*Sphaerotherium rugulosum*:-- Butler 1873: 175 (description)

*Sphaerotherium rugulosum*:-- Preudhomme de Borre 1884: 28 (list)

*Sphaerotherium rugulosum*:-- Golovatch & Hoffman 2001:239 (list)

*Sphaerotherium rugulosum*:-- VandenSpiegel et al. 2002: 171 (redescription).

Remarks: Butler (1873) and VandenSpiegel et al. (2002) note a potential synonymy of *S. rugulosum* and *S. punctatum*.

Types: F lectotype (fragment) (designated by VandenSpiegel et al. 2002: 171).

Habitat: South Africa: 'Caput Bonae Spei' (Cape).

Deposited: ZISP.

***Sphaerotherium selindum*** Alderweireldt, 1997

*Sphaerotherium (Tetraconosoma) selindum* Alderweireldt, 1997: 53 (first description)

*Sphaerotherium selindum*:-- Hunt 2002: 803 (parasitic Nematoda)

*Sphaerotherium selindum*:-- VandenSpiegel et al. 2002: 178 (list).

Types: M holotype, 1 M, 22 F paratypes.

Habitat: Zimbabwe: Mount Selinda, Chirinda Forest.

Deposited: MRAC.

***Sphaerotherium similare*** Schubart, 1958

*Sphaerotherium (Tetraconosoma) similare* Schubart, 1958: 82 (first description)

*Sphaerotherium (Tetraconosoma) similare*:-- Hamer 1998: 18 (list)

*Sphaerotherium similare*:-- VandenSpiegel et al. 2002: 178 (list)

*Sphaerotherium similare*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)

*Sphaerotherium similare*:-- Wesener et al. 2011: 967 (stridulation behaviour).

Types: M holotype, 1 M, 2 F paratypes.

Habitat: South Africa: E. Cape: Tsitsikama Forest.

Deposited: MZLU.

***Sphaerotherium solitarium*** Attems, 1928

*Sphaerotherium solitarium* Attems, 1928: 233 (first description)

*Sphaerotherium (Sphaerotherium) solitarium*:-- Schubart 1958: 91 (list)

*Sphaerotherium solitarium*:-- Lawrence 1966: 241 (list)

*Sphaerotherium (Sphaerotherium) solitarium*:-- Hamer 1998: 19 (list)

*Sphaerotherium solitarium*:-- VandenSpiegel et al. 2002: 178 (list).

Types: F holotype.

Habitat: South Africa: LP: Shilowane near Leydsdorp.

Deposited: SAMC; NHMW 72/233 (Stagl & Schiller, in prep.).

***Sphaerotherium spinatum*** Silvestri, 1910

*Sphaerotherium spinatum* Silvestri, 1910: 187 (first description)

*Sphaerotherium spinatum*:-- Attems 1928: 213 (description)

*Sphaerotherium (Tetraconosoma) spinatum*:-- Schubart 1958: 60 (list)

*Sphaerotherium (Tetraconosoma) spinatum*:-- Hamer 1998: 19 (list)

*Sphaerotherium spinatum*:-- VandenSpiegel et al. 2002: 179 (list).

Types: M and F syntypes.

Habitat: South Africa: E. Cape: Port Elizabeth.

Deposited: IEPN or ZMUH.

***Sphaerotherium steppense*** Schubart, 1958

*Sphaerotherium (Tetraconosoma) steppense* Schubart, 1958: 65 (first description)

*Sphaerotherium (Tetraconosoma) steppense*:-- Hamer 1998: 19 (list)

*Sphaerotherium steppense*:-- VandenSpiegel et al. 2002: 179 (list).

Types: M holotype.

Habitat: South Africa: E. Cape: 15 miles S Middleton.

Deposited: MZLU.

***Sphaerotherium subdorsale*** Silvestri, 1910

*Sphaerotherium subdorsale* Silvestri, 1910: 208 (first description)

*Sphaerotherium subdorsale*:-- Attems 1928: 228 (descrip.)

*Sphaerotherium (Sphaerotherium) subdorsale*:-- Schubart 1958: 95 (description)

*Sphaerotherium (Sphaerotherium) subdorsale*:-- Hamer 1998: 19 (list)

*Sphaerotherium subdorsale*:-- VandenSpiegel et al. 2002: 179 (list)

*Sphaerotherium subdorsale*:-- Armstrong & Hamer 2015: 153 (list).

Types: M and F syntypes.

Habitat: South Africa: Transvaal, no details.

Deposited: IEPN or ZMA.



**Sphaerotherium submite** Silvestri, 1910

*Sphaerotherium submite* Silvestri, 1910: 204 (first description)

*Sphaerotherium submite*:-- Attems 1928: 222 (list)

*Sphaerotherium (Tetraconosoma) submite*:-- Schubart 1958: 58 (list)

*Sphaerotherium (Tetraconosoma) submite*:-- Hamer 1998: 19 (list)

*Sphaerotherium submite*:-- VandenSpiegel et al. 2002: 179 (list).

Types: M and F syntypes.

Habitat: South Africa: W. Cape: Knysna.

Deposited: IEPN.

**Sphaerotherium tenuitarse** Silvestri, 1910

*Sphaerotherium tenuitarse* Silvestri, 1910: 186 (first description)

*Sphaerotherium tenuitarse*:-- Attems 1928: 215 (description)

*Sphaerotherium tenuitarse*:-- Attems 1934: 464 (description)

*Sphaerotherium (Tetraconosoma) tenuitarse*:-- Schubart 1958: 76 (list)

*Sphaerotherium (Tetraconosoma) tenuitarse*:-- Hamer 1998: 19 (list)

*Sphaerotherium tenuitarse*:-- VandenSpiegel et al. 2002: 179 (list)

*Sphaerotherium tenuitarse*:-- Armstrong & Hamer 2015: 153 (list).

Types: M and F syntypes.

Habitat: South Africa: W. Cape: Knysna.

Deposited: IEPN.

**Sphaerotherium tomentosum** Schubart, 1958

*Sphaerotherium (Sphaerotherium) tomentosum* Schubart, 1958: 96 (first description)

*Sphaerotherium (Sphaerotherium) tomentosum*:-- Hamer 1998: 19 (list)

*Sphaerotherium tomentosum*:-- VandenSpiegel et al. 2002: 179 (list)

*Sphaerotherium tomentosum*:-- Armstrong & Hamer 2015: 153 (list).

Types: M holotype, 1 F paratype.

Habitat: South Africa: KZN: Drakensberg, RNNP, Gudu Falls.

Deposited: MZLU.

**Sphaerotherium transzambeziacum** Jocque, 1984

*Sphaerotherium (Tetraconosoma) transzambeziacum* Jocque, 1984: 67 (first description)

*Sphaerotherium transzambeziacum*:-- VandenSpiegel et al. 2002: 179 (list).

Types: M holotype, 12 F paratypes.

Habitat: Malawi, Mt. Mulanje, Tchuchila, Nambiti.

Deposited: Holotype MRAC 15420, paratypes MRAC 14922 & 14938.

**Sphaerotherium tuberosum** Attems, 1928

*Sphaerotherium tuberosum* Attems, 1928: 220 (first description)

*Sphaerotherium (Tetraconosoma) tuberosum*:-- Schubart 1958: 56 (description)

*Sphaerotherium (Tetraconosoma) tuberosum*:-- Hamer 1998: 19 (list)

*Sphaerotherium tuberosum*:-- VandenSpiegel et al. 2002: 179 (list).

Types: M and F syntypes.

Habitat: South Africa: Cape Province; W. Cape, Table Mtn; Zoekmakar, N. Transvaal. No type locality has been selected.

Deposited: SAMC; NHMW 2203.

**Sphaerotherium tztzikamum** Schubart, 1958

*Sphaerotherium (Tetraconosoma) tztzikamum* Schubart, 1958: 70 (first description)

*Sphaerotherium (Tetraconosoma) tztzikamum*:-- Hamer 1998: 19 (list)

*Sphaerotherium (Tetraconosoma) tztzikamum*:-- VandenSpiegel et al. 2002: 179 (list).

Types: M holotype, 1 F paratype.

Habitat: South Africa: E. Cape: Tsitsikama Forest, Stormsriver.

Deposited: MZLU.

**Sphaerotherium weberii** Silvestri, 1910

*Sphaerotherium Weberii* [sic!] Silvestri, 1910: 194 (first description)

*Sphaerotherium weberi* [sic!]:-- Attems 1928: 219 (description)

*Sphaerotherium (Tetraconosoma) weberii*:-- Schubart, 1958: 43 (description)

*Sphaerotherium (Tetraconosoma) weberii afoveatum*:-- Schubart, 1958: 46 (first description)

*Sphaerotherium (Tetraconosoma) weberii*:-- Hamer 1998: 19 (list)

*Sphaerotherium (Tetraconosoma) weberii afoveatum*:-- Hamer 1998: 20 (list)

*Sphaerotherium (Tetraconosoma) weberii*:-- VandenSpiegel et al. 2002: 179 (list)

*Sphaerotherium (Tetraconosoma) weberii afoveatum*:-- VandenSpiegel et al. 2002: 179 (list).

Types: M and F syntypes.  
Habitat: South Africa: W. Cape: Table Mtn.  
Deposited: IEPN.

*Sphaerotherium zuluense* Schubart, 1958

*Sphaerotherium (Tetraconosoma) zuluense* Schubart, 1958: 74 (first description)

*Sphaerotherium (Tetraconosoma) zuluense*:-- Hamer 1998: 20 (list)

*Sphaerotherium zuluense*:-- VandenSpiegel et al. 2002: 180 (list)

*Sphaerotherium zuluense*:-- Armstrong & Hamer 2015: 153 (list).

Types: F holotype.  
Habitat: South Africa: KZN: Hluhluwe Game Reserve.  
Deposited: MZLU.

### **Genus *Kylindotherium* Attems, 1926**

*Kylindotherium* Attems, 1926: 120 (first description); Attems 1928: 257 (description); Jeekel 1971: 26 (list); Jeekel 1974: 45 (classification); Wesener & VandenSpiegel 2009: 551 (classification); Wesener et al. 2010b: 1188 (classification).

**Description:** Most likely a synonym of *Sphaerotherium*.

**Type species:** *Kylindotherium leve* Attems, 1926: 118 by monotypy.

*Kylindotherium leve* Attems, 1926

*Kylindotherium leve* Attems, 1926: 118 (first description)

*Kylindotherium leve*:-- Attems 1928: 237 (description).

Types: M and F syntypes.  
Habitat: South Africa, Cape, Wellington, Witte River.  
Deposited: NHMW 2193 (Stagl & Schiller, in prep.).

### **Nomina dubia of the Sphaerotheriidae**

*Sphaerotherium nigrum* Butler, 1872

*Sphaerotherium nigrum* Butler 1872: 359 (first description)

*Sphaerotherium nigrum*:-- Butler 1873: 173 (list)

*Sphaerotherium nigrum*:-- Preudhomme de Borre 1884: 27 (list)

*Sphaerotherium nigrum*:-- Attems 1928: 236 (list)

*Sphaerotherium nigrum*:-- Schubart 1958: 101 (list)

*Sphaerotherium nigrum*:-- VandenSpiegel et al. 2002: 180 (list).

Types: 1 holotype of unknown sex.  
Habitat: South Africa.  
Deposited: NHML (presumably lost).

### **Family Arthrosphaeridae Jeekel, 1974**

Arthrosphaeridae Wesener & VandenSpiegel, 2009: 561.  
Arthrosphaeridae Wesener et al. 2010b: 1186 (mentioned in Sphaerotheriida classification).

Sub Subfamily Arthrosphaerinae Jeekel, 1974: 45 (first description); Hoffman 1980: 63 (list); Shelley et al. 2000: 12 (list); Jeekel 2001: 6 (list); Arthrosphaerinae Wesener & Sierwald 2005b: 598 (cladogram).

#### **Genera included (4)**

*Arthrosphaera* Pocock, 1895 (Southern India and Sri Lanka)

*Sphaeromimus* de Saussure & Zehntner, 1902 (SE Madagascar)

*Microsphaerotherium* Wesener & VandenSpiegel, 2007 (central Madagascar)

*Zoosphaerium* Pocock, 1895 (Madagascar)

#### **Type genus: *Arthrosphaera* Pocock, 1895**

117 species (including 11 nomina dubia).

### **Genus *Arthrosphaera* Pocock, 1895**

(Figs 12 D–E)

*Arthrosphaera* Pocock, 1895: 410 (first description); Pocock 1899: 270 (key); Attems 1914: 142 (list); Verhoeff 1924: 60; Attems 1926: 120 (list); Attems 1928: 203 (new species); Attems 1935: 127 (new species); Attems 1936: 152 (key); Attems 1943: 62 (new species); Attems 1953: 155 (list); Jeekel 1971: 23 (list); Jeekel 1974: 45 (classification); Hoffman 1980: 63 (list); Jeekel 2001: 7 (list); Ashwini & Sridhar 2008: 749 (distribution); Wesener & VandenSpiegel 2009: 551 (morphological phylogenetic analysis); Wesener et al. 2010b: 1188 (molecular phylogenetic analysis); Wesener 2014a: 199 (morphological phylogenetic analysis).

#### **Synonyms:**

---- *Trochosoma* Chamberlin, 1921: 56 (first description), synonymized under *Arthrosphaera* by Jeekel 2001: 7. Jeekel 1971: 29 (list); Jeekel 1974: 45 (classification); Hoffman 1980: 63 (list).

Type species: *Trochosoma pelloceps* Chamberlin, 1921  
 ---- *Trivandrobelum* Verhoeff, 1937: 82 (first description), synonymized under *Arthrosphaera* by Jeekel 2001: 7. Verhoeff 1937: 82 (list); Jeekel 1971: 29 (list); Jeekel 1974: 45 (classification); Hoffman 1980: 63 (list).

Type species: *Trivandrobelum stridulum* Verhoeff, 1937  
 ---- *Odontosternum* Attems, 1943: 62 (first description), synonymized under *Arthrosphaera* by Jeekel 2001: 7. Attems 1953: 155 (list); Jeekel 1971: 27 (list); Jeekel 1974: 45 (classification).

Type species: *Odontosternum fuscum* Attems, 1943

**Description:** Anterior telopod with four podomeres distal to syncoxite, telopoditomere 4 with lobe covered with sclerotized spots. Harp carrying one or two stridulation ribs. Posterior telopods with three telopoditomeres, telopoditomere 3 carrying two membranous lobes. Operculum of female vulva well-rounded, shorter than bursa. Inner plate of vulva heavily elongated, protruding as far as, or even above, operculum. Female washboard with few, usually 4–6 stridulation ribs. Legs with a coxal lobe, tarsi usually wide, paddle-like, rarely slender. Underside of anal shield usually with two locking carinae, which are completely reduced in some species. First antennomere without groove, only isolated sclerotized scales, lacking sensilla basiconica like all other antennomeres. Antennomere 6 large, flattened, axe-shaped, carrying numerous apical cones. 25–45 mm long.

**Type species:** *Zephronia heterostictica* Newport, 1844.

#### Included species (40)

*Arthrosphaera atrisparsa* (Butler, 1878) (India)  
*Arthrosphaera attemsi* Jeekel, 2001 (Sri Lanka)  
*Arthrosphaera aurocincta* Pocock, 1899 (India)  
*Arthrosphaera bicolor* Pocock, 1895 (India)  
*Arthrosphaera brandti* (Humbert, 1865) (Sri Lanka, introduced to Tanzania)  
*Arthrosphaera carinata* Attems, 1936 (India)  
*Arthrosphaera corrugata* (Butler, 1872) (Sri Lanka)  
*Arthrosphaera craspedota* Attems, 1936 (India)  
*Arthrosphaera dalyi* Pocock, 1895 (India)  
*Arthrosphaera davisoni* Pocock, 1895 (India)  
*Arthrosphaera dentigera* Verhoeff, 1930 (Sri Lanka)  
*Arthrosphaera distincta* Pocock, 1895 (India)  
*Arthrosphaera fumosa* Pocock, 1895 (India)  
*Arthrosphaera fusca* (Attems, 1943) (India)  
*Arthrosphaera gracilis* Attems, 1936 (India)  
*Arthrosphaera hendersoni* Pocock, 1895 (India)  
*Arthrosphaera heterostictica* (Newport, 1844) (India)  
*Arthrosphaera inermis* (Humbert, 1865) (India, Sri Lanka)  
*Arthrosphaera leopardina* (Butler, 1872) (Sri Lanka)  
*Arthrosphaera lutescens* (Butler, 1872) (India)

*Arthrosphaera madura* Pandian, 1966 (India)  
*Arthrosphaera magna* Attems, 1936 (India)  
*Arthrosphaera marginella* Silvestri, 1897 (India)  
*Arthrosphaera marmorata* (Butler, 1882) (India)  
*Arthrosphaera nitida* Pocock, 1895 (India)  
*Arthrosphaera noticeps* (Butler, 1872) (Sri Lanka)  
*Arthrosphaera pelloceps* (Chamberlin, 1921) (India)  
*Arthrosphaera pilifera* (Butler, 1872) (Sri Lanka)  
*Arthrosphaera pygostolis* Attems, 1935 (India)  
*Arthrosphaera ruginosa* Jeekel, 2001 (Sri Lanka)  
*Arthrosphaera rugosa* Verhoeff, 1930 (Sri Lanka)  
*Arthrosphaera scholastica* Attems, 1936 (India)  
*Arthrosphaera severa* Attems, 1935 (India)  
*Arthrosphaera silvestrii* Jeekel, 2001 (India)  
*Arthrosphaera stridula* (Verhoeff, 1937) (India)  
*Arthrosphaera thurstoni* Pocock, 1895 (India)  
*Arthrosphaera transitiva* Attems, 1936 (India)  
*Arthrosphaera versicolor* (White, 1859) (Sri Lanka)  
*Arthrosphaera wroughtoni* Pocock, 1895 (India)  
*Arthrosphaera zebraica* (Butler, 1872) (India)

***Arthrosphaera atrisparsa*** (Butler, 1878)  
*Zephronia atrisparsa* Butler, 1878: 302 (first description)  
*Zephronia atrisparsa*:-- Preudhomme de Borre 1884: 23 (list)  
*Arthrosphaera atrisparsa*:-- Pocock 1899: 274 (new locality)  
*Arthrosphaera atrisparsa*:-- Attems 1914: 147 (list)  
*Arthrosphaera atrisparsa*:-- Attems 1936: 164 (list)  
*Arthrosphaera artisparsa* [sic!]:-- Rajulu 1970: 125 (list)  
*Arthrosphaera atrisparsa*:-- Kunte 1974: 673 (list)  
*Arthrosphaera atrisparsa*:-- Jeekel 2001: 7 (list)  
*Arthrosphaera atrisparsa*:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrosphaera atrisparsa*:-- Sridhar 2015: 3 (list)  
*Arthrosphaera atrisparsa*:-- Sridhar & Ashwini 2016: 18 (list).  
 ---- *Zephronia heterostictica* [sic!] e.p. :-- Pocock 1892: 145, **NOT** *Zephronia heterostictica* Newport, 1844.

Types: M holotype.  
 Locality: India: Bombay.  
 Deposited: NHML.

***Arthrosphaera attemsi*** Jeekel, 2001  
*Arthrosphaera attemsi* Jeekel, 2001: 7 (e.p.)  
*Arthrosphaera attemsi*:-- De Zoysa et al. 2016: 454 (list).  
 ---- *Arthrosphaera inermis* Attems 1936: 159 (first description, e.p.), **NOT** *Arthrosphaera inermis* (Humbert, 1865).

Types: M holotype.  
 Locality: Sri Lanka: Peradeniya.  
 Deposited: NHMW 100/159 (Stagl & Schiller, in prep.).



*Arthrosphaera aurocineta* Pocock, 1899  
*Arthrosphaera aurocineta* Pocock, 1899: 276 (first description)  
*Arthrosphaera aurocineta*:-- Gravely 1915: 518 (new locality, sound)  
*Arthrosphaera aurocineta*:-- Attems 1914: 147 (list)  
*Arthrosphaera aurocineta*:-- Attems 1936: 165 (list)  
*Arthrosphaera aurocineta*:-- Rajulu 1970: 125 (list)  
*Arthrosphaera aurocineta*:-- Jeekel 2001: 7 (list)  
*Arthrosphaera aurocineta*:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrosphaera aurocineta*:-- Sridhar 2015: 3 (list)  
*Arthrosphaera aurocineta*:-- Sridhar & Ashwini 2016: 18 (list).

Types: M and F syntypes.

Locality: "East Indies" (Pocock 1899), Parambikulam, India: Cochin Ghats (Gravely 1915).

Deposited: NHML.

*Arthrosphaera bicolor* Pocock, 1895  
*Arthrosphaera bicolor* Pocock, 1895: 411 (first descrip.)  
*Arthrosphaera bicolor*:-- Pocock 1899: 278 (description)  
*Arthrosphaera bicolor*:-- Chamberlin & Wang 1953: 2 (new locality)  
*Arthrosphaera bicolor*:-- Attems 1914: 147 (list)  
*Arthrosphaera bicolor*:-- Attems 1936: 165 (list)  
*Arthrosphaera bicolor*:-- Rajulu 1970: 125 (list)  
*Arthrosphaera bicolor*:-- Chowdaiah & Kanaka 1974: 56 (cytology)  
*Arthrosphaera bicolor*:-- Rangaswamy et al. 1978: 99 (distribution)  
*Arthrosphaera bicolor*:-- Bano 1983: 168 (list)  
*Arthrosphaera bicolor*:-- Rangaswamy et al. 1983: 7 (distribution)  
*Arthrosphaera bicolor*:-- Jeekel 2001: 8 (list)  
*Arthrosphaera bicolor*:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrosphaera bicolor*:-- Sridhar 2015: 3 (list)  
*Arthrosphaera bicolor*:-- Sridhar & Ashwini 2016: 18 (list).

Types: M holotype.

Habitat: India: Salem, Shevaroy Hills.

Deposited: NHML.

*Arthrosphaera brandti* (Humbert, 1865)  
 (Fig. 13A)  
*Sphaeropoeus Brandtii* Humbert, 1865: 38 (first description)  
*Zephronia Brandtii*:-- Butler 1872: 355 (list)  
*Zephronia brandtii*:-- Butler 1873: 178 (list)  
*Zephronia Brandtii*:-- Karsch 1881: 29 (list)

*Zephronia Brandtii*:-- Preudhomme de Borre 1884: 23 (list)  
*Zephronia brandti* [sic!]:-- Pocock 1892: 143 (new locality)  
*Arthrosphaera Brandti*:-- Pocock 1899: 272 (new locality)  
*Sphaeropoeus Brandti*:-- Saussure & Zehntner 1902: 14 (list)  
*Arthrosphaera Brandti*:-- Attems 1914: 147 (list)  
*Arthrosphaera brandti*:-- Carl 1922: 565 (list)  
*Arthrosphaera brandti*:-- Attems 1936: 164 (description)  
*Arthrosphaera brandti*:-- Rajulu 1970: 125 (list)  
*Arthrosphaera brandti*:-- Enghoff 1977: 997 (new locality, introduced E. Africa)  
*Arthrosphaera brandti*:-- Jeekel 2001: 8 (list)  
*Arthrosphaera brandti*:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrosphaera brandti*:-- Wesener & VandenSpiegel 2009: 548 (phylogenetic analysis)  
*Arthrosphaera brandti*:-- Wesener et al. 2010b: 1185 (phylogenetic analysis)  
*Arthrosphaera brandti*:-- Pick et al. 2014: 3 (hemocyanin)  
*Arthrosphaera brandti*:-- Sridhar 2015: 3 (list)  
*Arthrosphaera brandti*:-- Sridhar & Ashwini 2016: 18 (list)  
*Arthrosphaera brandti*:-- De Zoysa et al. 2016: 454 (list)  
 ---- *Zephronia chitonoides* Butler, 1872: 354 (first descr.), synonymized under *A. brandtii* by Pocock 1892: 143  
*Zephronia chitonoides* [sic!]:-- Preudhomme de Borre 1884: 24 (list).

Remark: The record from an East African site concerns an introduced population (Enghoff 1977).

Types: Syntypes.

Habitat: Sri Lanka: Peradeniya (Type); Punduloya; Talawa, Anuradhapura. India, Madras. Tanzania: Amani, East Usambara Mts.

Deposited: MHNG?

*Arthrosphaera carinata* Attems, 1936  
*Arthrosphaera carinata* Attems, 1936: 162 (first descrip.)  
*Arthrosphaera carinata* [sic!]:-- Rajulu 1970: 124 (list)  
*Arthrosphaera carinata*:-- Jeekel 2001: 8 (list)  
*Arthrosphaera carinata*:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrosphaera carinata*:-- Ambarish & Sridhar 2013a: 64 (distribution, behaviour)  
*Arthrosphaera carinata*:-- Sridhar 2015: 3 (list)  
*Arthrosphaera carinata*:-- Ambarish & Sridhar 2015c (distribution)  
*Arthrosphaera carinata*:-- Sridhar & Ashwini 2016: 18 (list).

Types: M syntype.

Habitat: India: Kemmangundi -Kalhaattigiri, Babudan Hills, Kaddur distr., Mysore.

Deposited: NHMW 2206 (Stagl & Schiller, in prep.).

***Arthrosphaera corrugata*** (Butler, 1872)

*Zephronia corrugata* Butler, 1872: 355 (first description)

*Zephronia corrugata*-- Butler 1873: 180 (list)

*Zephronia corrugata*-- Preudhomme de Borre 1884: 24 (list)

*Arthrosphaera corrugata*-- Pocock 1899: 273 (new combination, list)

*Arthrosphaera corrugata*-- Attems 1914: 147 (list);

*Arthrosphaera corrugata*-- Attems 1936: 157 (new locality)

*Arthrosphaera corrugata*-- Jeekel 2001: 8 (list)

*Arthrosphaera corrugata*-- Sridhar & Kadamannaya 2009: 68 (list)

*Arthrosphaera corrugata*-- Sridhar 2015: 3 (list)

*Arthrosphaera corrugata*-- Sridhar & Ashwini 2016: 18 (list)

*Arthrosphaera corrugata*-- De Zoysa et al. 2016: 454 (list).

--- *Zephronia inermis* (e.p.)-- Pocock, 1892: 144. **NOT** *Sphaeropoeus inermis* Humbert, 1865, and **NOT** *Arthrosphaera corrugata* Silvestri, 1897 (= *Arthrosphaera silvestrii* Jeekel, 2001).

Types: Holotype of unknown sex.

Habitat: Sri Lanka: Peradeniya.

Deposited: NHML.

***Arthrosphaera craspedota*** Attems, 1936

*Arthrosphaera craspedota* Attems, 1936: 156

*Arthrosphaera craspedota*-- Rajulu 1970: 124 (list)

*Arthrosphaera craspedota*-- Kanaka & Chowdaiah 1974: 269 (anatomy)

*Arthrosphaera craspedota*-- Chowdaiah & Kanaka 1974: 56 (cytology)

*Arthrosphaera craspedota*-- Rangaswamy et al. 1978: 99 (distribution)

*Arthrosphaera craspedota*-- Bano 1983: 168 (list)

*Arthrosphaera craspedota*-- Rangaswamy et al. 1983: 7 (distribution)

*Arthrosphaera craspedota*-- Jeekel 2001: 8 (list)

*Arthrosphaera craspedota* [sic!]-- Sridhar & Kadamannaya 2009: 68 (list)

*Arthrosphaera craspedota*-- Kadamannaya et al. 2012: 183 (morphology)

*Arthrosphaera craspedota*-- Ambarish et al. 2013: 205 (cytology)

*Arthrosphaera craspedota*-- Basil-Rose et al. 2014: 332 (physiology)

*Arthrosphaera craspedota*-- Sridhar 2015: 3 (list)

*Arthrosphaera craspedota*-- Sridhar & Ashwini 2016: 18 (list).

Types: M and F syntypes.

Habitat: India: Cochin State, Parambikulam.

Deposited: NHMW 2207 (Stagl & Schiller, in prep.).

***Arthrosphaera dalyi*** Pocock, 1895

*Arthrosphaera dalyi* Pocock, 1895: 412 (first description)

*Arthrosphaera dalyi*-- Pocock 1899: 280 (new locality, redescription)

*Arthrosphaera dalyi*-- Attems 1914: 147 (list)

*Arthrosphaera dalyi*-- Attems 1936: 165 (list)

*Arthrosphaera dalyi*-- Rajulu 1970: 125 (list)

*Arthrosphaera dalyi*-- Chowdaiah & Kanaka 1974: 54 (cytology)

*Arthrosphaera dalyi*-- Demange 1977: 231 (new locality)

*Arthrosphaera dalyi*-- Rangaswamy et al. 1978: 98 (distribution)

*Arthrosphaera dalyi*-- Bano 1983: 168 (list)

*Arthrosphaera dalyi*-- Janardanan & Ramachandran 1983: 408 (parasites)

*Arthrosphaera dalyi*-- Rangaswamy et al. 1983: 7 (distribution)

*Arthrosphaera dalyi* [sic!]-- Nattuthurai & Subbiah 1983: 113 (physiology)

*Arthrosphaera dalyi*-- Achar 1986: 90 (cytology)

*Arthrosphaera dalyi*-- Nandre & Joshi 1993: 40 (morphology)

*Arthrosphaera dalyi*-- Jeekel 2001: 8 (list)

*Arthrosphaera dalyi*-- Sridhar & Kadamannaya 2009: 68 (list)

*Arthrosphaera dalyi*-- Kadamannaya & Sridhar 2009a: 761 (ecology, new locality)

*Arthrosphaera dalyi*-- Kadamannaya & Sridhar 2009b: 506 (behaviour)

*Arthrosphaera dalyi*-- Kadamannaya et al. 2010a: 467 (cytology)

*Arthrosphaera dalyi*-- Kadamannaya et al. 2010b: 245 (ecology)

*Arthrosphaera dalyi*-- Ambarish & Sridhar 2013a: 64 (distribution, behaviour)

*Arthrosphaera dalyi*-- Sridhar et al. 2013: 539 (ecology)

*Arthrosphaera dalyi*-- Ambarish & Sridhar 2014c: 15 (behaviour)

*Arthrosphaera dalyi*-- Sridhar 2015: 3 (list)

*Arthrosphaera dalyi*-- Ambarish & Sridhar 2015c: (distribution)

*Arthrosphaera dalyi*-- Ambarish & Sridhar 2016: 105 (behaviour)

*Arthrosphaera dalyi*-- Sridhar & Ashwini 2016: 18 (list).

Types: Syntypes.

Habitat: India: Lone Cottage, Palni Hills; Kodaikanal, Palni Hills, Western Ghats.

Deposited: NHML.

***Arthrosphaera davisoni* Pocock, 1895**

*Arthrosphaera Davisoni* Pocock, 1895: 412 (first descrip.)

*Arthrosphaera Davisoni*-- Pocock 1899: 279 (redescription)

*Arthrosphaera davisoni*-- Attems 1914: 148 (list)

*Arthrosphaera davisoni*-- Attems 1936: 165 (list)

*Arthrosphaera davisoni*-- Rajulu 1970: 125 (list)

*Arthrosphaera davisoni*-- Bano 1983: 168 (list)

*Arthrosphaera davisoni*-- Achar 1986: 90 (cytology)

*Arthrosphaera davisoni*-- Jeekel 2001: 8 (list)

*Arthrosphaera davisoni*-- Sridhar & Kadamannaya 2009: 68 (list)

*Arthrosphaera davisoni*-- Kadamannaya & Sridhar 2009a: 761 (ecology, new locality)

*Arthrosphaera davisoni*-- Kadamannaya & Sridhar 2009b: 506 (behaviour)

*Arthrosphaera davisoni*-- Kadamannaya et al. 2010b: 245 (ecology)

*Arthrosphaera davisoni*-- Ambarish & Sridhar 2013a: 64 (distribution, behaviour)

*Arthrosphaera davisoni*-- Sridhar et al. 2013: 539 (ecology)

*Arthrosphaera davisoni*-- Sridhar 2015: 3 (list)

*Arthrosphaera davisoni*-- Sridhar & Ashwini 2016: 18 (list).

Remark: The spelling “davidsoni” in the 1895 publication is an obvious printer’s error (Jeekel 2001).

Types: M and F syntypes.

Habitat: India: Coimbatore, Animallai Hills, Western Ghats.

Deposited: NHML.

***Arthrosphaera dentigera* Verhoeff, 1930**

*Arthrosphaera dentigera* Verhoeff, 1930: 208 (first description)

*Arthrosphaera dentigera*-- Attems 1936: 165 (list)

*Arthrosphaera dentigera*-- Jeekel 2001: 9 (list)

*Arthrosphaera dentigera*-- Sridhar & Kadamannaya 2009: 68 (list)

*Arthrosphaera dentigera*-- Sridhar 2015: 3 (list)

*Arthrosphaera dentigera*-- Sridhar & Ashwini 2016: 18 (list)

*Arthrosphaera dentigera*-- De Zoysa et al. 2016: 455 (list)

Remark: The name of this species was already used by Verhoeff, 1910: 241, fig. XXIX, as a *nomen nudum* (Jeekel 2001).

Types: M holotype?

Habitat: Sri Lanka: Kandy.

Deposited: Unknown.

***Arthrosphaera disticta* Pocock, 1895**

*Arthrosphaera disticta* Pocock, 1895: 411 (first description)

*Arthrosphaera disticta*-- Pocock 1899: 278 (redescription)

*Arthrosphaera disticta*-- Attems 1914: 148 (list)

*Arthrosphaera disticta*-- Attems 1936: 165 (list)

*Arthrosphaera disticta*-- Rajulu 1970: 125 (list)

*Arthrosphaera disticta*-- Chowdaiah & Kanaka 1974: 54 (cytology)

*Arthrosphaera disticta*-- Demange 1977: 231 (new locality)

*Arthrosphaera disticta*-- Rangaswamy et al. 1978: 98 (distribution)

*Arthrosphaera disticta*-- Bano 1983: 168 (list)

*Arthrosphaera disticta*-- Janardanan & Ramachandran 1983: 408 (parasites)

*Arthrosphaera disticta*-- Rangaswamy et al. 1983: 6 (distribution)

*Arthrosphaera disticta*-- Mary & Prema 1984: 29 (physiology)

*Arthrosphaera disticta*-- Achar 1986: 90 (cytology)

*Arthrosphaera disticta*-- Jeekel 2001: 9 (list)

*Arthrosphaera disticta*-- Sridhar & Kadamannaya 2009: 68 (list)

*Arthrosphaera disticta*-- Ambarish & Sridhar 2013a: 64 (distribution, behaviour)

*Arthrosphaera disticta*-- Ambarish & Sridhar 2014a: 95 (ecology)

*Arthrosphaera disticta*-- Ambarish & Sridhar 2014c: 15 (behaviour)

*Arthrosphaera disticta*-- Basil-Rose et al. 2014: 332 (physiology)

*Arthrosphaera disticta*-- Sridhar 2015: 3 (list)

*Arthrosphaera disticta*-- Ambarish & Sridhar 2015c: (distribution)

*Arthrosphaera disticta*-- Ambarish & Sridhar 2016: 105 (behaviour).

*Arthrosphaera disticta*-- Sridhar & Ashwini 2016: 18 (list).

Types: M holotype?

Habitat: India: Yercand, Sheveroy Hills.

Deposited: NHML.

***Arthrosphaera fumosa* Pocock, 1895**

*Arthrosphaera fumosa* Pocock, 1895: 412 (first description)

*Arthrosphaera fumosa*-- Pocock 1899: 280 (redescription)

*Arthrosphaera fumosa*-- Attems 1914: 148 (list)



*Arthrophaera fumosa*:-- Attems 1936: 165 (list)  
*Arthrophaera fumosa*:-- Rajulu 1970: 125 (list)  
*Arthrophaera fumosa*:-- Jeekel 2001: 9 (list)  
*Arthrophaera fumosa*:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrophaera fumosa*:-- Kadamannaya & Sridhar 2009b: 506 (behaviour)  
*Arthrophaera fumosa*:-- Kadamannaya et al. 2010b: 245 (ecology)  
*Arthrophaera fumosa*:-- Ambarish & Sridhar 2013a: 64 (distribution, behaviour)  
*Arthrophaera fumosa*:-- Ambarish & Sridhar 2013b: 258 (ecology)  
*Arthrophaera fumosa*:-- Sridhar & Ambarish 2013: 1544 (ecology)  
*Arthrophaera fumosa*:-- Ambarish & Sridhar 2014a: 95 (ecology)  
*Arthrophaera fumosa*:-- Ambarish & Sridhar 2014b: 49 (cytology)  
*Arthrophaera fumosa*:-- Sridhar et al. 2013: 539 (ecology)  
*Arthrophaera fumosa*:-- Ambarish & Sridhar 2014c: 15 (behaviour)  
*Arthrophaera fumosa*:-- Sridhar 2015: 3 (list)  
*Arthrophaera fumosa*:-- Ambarish & Sridhar 2015a: 642 (ecology)  
*Arthrophaera fumosa*:-- Ambarish & Sridhar 2015b: 118 (physiology)  
*Arthrophaera fumosa*:-- Ambarish & Sridhar 2015c: (distribution)  
*Arthrophaera fumosa*:-- Ambarish & Sridhar 2016: 105 (behavior)  
*Arthrophaera fumosa*:-- Sridhar & Ashwini 2016: 18 (list).

Types: F holotype.  
 Habitat: India: Coimbatore.  
 Deposited: NHML.

*Arthrophaera fusca* (Attems, 1943)  
*Odontosternum fuscum* Attems, 1943: 65 (first description)  
*Arthrophaera fusca*:-- Jeekel 2001: 9 (new combination).

Types: M and F syntypes.  
 Habitat: India: Ahmednagar.  
 Deposited: NHMW 2205 (Stagl & Schiller, in prep.).

*Arthrophaera gracilis* Attems, 1936  
*Arthrophaera gracilis* Attems, 1936: 158 (first description)  
*Arthrophaera gracilis*:-- Rajulu 1970: 124 (list)  
*Arthrophaera gracilis*:-- Chowdaiah & Kanaka 1974: 54 (cytology)

*Arthrophaera gracilis*:-- Rangaswamy et al. 1978: 98 (distribution)  
*Arthrophaera gracilis*:-- Bano 1983: 168 (list)  
*Arthrophaera gracilis*:-- Rangaswamy et al. 1983: 7 (distribution)  
*Arthrophaera gracilis*:-- Jeekel 2001: 9 (list)  
*Arthrophaera gracilis*:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrophaera gracilis*:-- Sridhar 2015: 3 (list)  
*Arthrophaera gracilis*:-- Sridhar & Ashwini 2016: 18 (list).

Types: M syntype.  
 Habitat: India: Coudlallam, South India.  
 Deposited: NHMW 2208 (Stagl & Schiller, in prep.).

*Arthrophaera hendersoni* Pocock, 1895  
*Arthrophaera Hendersoni* Pocock, 1895: 411 (first description)  
*Arthrophaera Hendersoni*:-- Pocock 1899: 277 (re-description)  
*Arthrophaera hendersoni*:-- Attems 1914: 148 (list)  
*Arthrophaera hendersoni*:-- Attems 1936: 162 (additional specimens)  
*Arthrophaera hendersoni*:-- Rajulu 1970: 124 (list)  
*Arthrophaera hendersoni*:-- Chowdaiah & Kanaka 1974: 54 (cytology)  
*Arthrophaera handersoni* [sic!]:-- Rangaswamy et al. 1978: 99 (distribution)  
*Arthrophaera hendersoni*:-- Bano 1983: 168 (list)  
*Arthrophaera hendersoni*:-- Rangaswamy et al. 1983: 7 (distribution)  
*Arthrophaera hendersoni*:-- Jeekel 2001: 9 (list)  
*Arthrophaera hendersoni*:-- Beron 2008: 175 (list)  
*Arthrophaera hendersoni*:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrophaera hendersoni*:-- Sridhar 2015: 3 (list)  
*Arthrophaera hendersoni*:-- Ambarish & Sridhar 2015c: (distribution)  
*Arthrophaera hendersoni*:-- Sridhar & Ashwini 2016: 18 (list).

Types: M and F syntypes.  
 Habitat: India: Kodaikanal, Palnai Hills.  
 Deposited: NHML.

*Arthrophaera heterostictica* (Newport, 1844)  
*Zephronia heterostictica* Newport, 1844: 265 (first description)  
*Zephronia heterostictica*:-- Gervais 1847: 84 (list)  
*Zephronia heterosticta* [sic!]:-- Preudhomme de Borre 1884: 24 (list)  
*Zephronia heterostictica*:-- Pocock 1892: 145 (description)

*Arthrosphaera heterostictica*:-- Pocock 1895: 411 (list)  
*Arthrosphaera heterosticta* [sic!]:-- Pocock 1899: 273 (new locality)  
*Arthrosphaera heterosticta* [sic!]:-- Attems 1936: 165 (new localities)  
*Arthrosphaera heterosticta* [sic!]:-- Rajulu 1970: 126 (list)  
*Arthrosphaera heterostictica*:-- Jeekel 2001: 9 (list)  
*Arthrosphaera heterosticta* [sic!]:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrosphaera heterosticta* [sic!]:-- Sridhar 2015: 3 (list)  
*Arthrosphaera heterosticta* [sic!]:-- Sridhar & Ashwini 2016: 18 (list).

Types: 1 holotype of unknown sex.

Habitat: India: Bombay; Madras; Nilghiri Hills; Panchgani, Western Ghats; Poona, Bombay Presidency.

Deposited: NHML.

*Arthrosphaera inermis* (Humbert, 1865)  
*Sphaeropoeus inermis* Humbert, 1865: 39 (first descrip.)  
*Zephronia inermis*:-- Butler 1873: 179 (new locality)  
*Zephronia inermis*:-- Karsch 1881: 29 (description)  
*Zephronia inermis*:-- Preudhomme de Borre 1884: 24 (list)  
*Zephronia inermis*:-- Pocock 1892: 144 (new locality)  
*Arthrosphaera inermis*:-- Pocock 1899: 273 (new locality)  
*Sphaeropoeus inermis*:-- Saussure & Zehntner 1902: 14 (list)  
*Arthrosphaera inermis*:-- Attems 1914: 148 (list)  
*Arthrosphaera inermis*:-- Jeekel 2001: 9 (list)  
*Arthrosphaera inermis*:-- Sridhar & Kadamannaya 2009: 68 (list)  
*Arthrosphaera inermis*:-- Wesener & VandenSpiegel 2009: 548 (phylogenetic analysis)  
*Arthrosphaera inermis*:-- Sridhar 2015: 3 (list)  
*Arthrosphaera inermis*:-- Sridhar & Ashwini 2016: 18 (list)  
*Arthrosphaera inermis*:-- De Zoysa et al. 2016: 455 (list).

Remark: Not *Arthrosphaera inermis* Attems, 1936 = *Arthrosphaera attemsi* Jeekel, 2001.

Types: syntypes

Habitat: Sri Lanka: Peradeniya; valley of Pundeloya, near Rambodde; Pundeloya. India: Madras.

Deposited: MHNG.

*Arthrosphaera leopardina* (Butler, 1872)  
*Zephronia leopardina* Butler, 1872: 356 (first description)  
*Zephronia leopardina*:-- Butler 1873: 181 (description)  
*Zephronia leopardina*:-- Preudhomme de Borre: 24 (list)  
*Arthrosphaera leopardina*:-- Pocock 1899: 274 (new combination)

*Arthrosphaera leopardina*:-- Attems 1914: 148 (list)  
*Arthrosphaera leopardina*:-- Attems 1936: 166 (list)  
*Arthrosphaera leopardina*:-- Jeekel 2001: 10 (list)  
*Arthrosphaera leopardina*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera leopardina*:-- Sridhar 2015: 3 (list)  
*Arthrosphaera leopardina*:-- Sridhar & Ashwini 2016: 18 (list)  
*Arthrosphaera leopardina*:-- De Zoysa et al. 2016: 455 (list).  
 ---- *Zephronia inermis* Pocock 1892: 144 (misidentification, e. p.). **NOT** *Sphaeropoeus inermis* Humbert, 1865.

Types: Immature holotype of unknown sex.

Habitat: Sri Lanka.

Deposited: NHML.

*Arthrosphaera lutescens* (Butler, 1872)  
*Zephronia lutescens* Butler, 1872: 356 (first description)  
*Zephronia lutescens*:-- Butler 1873: 179 (description)  
*Zephronia lutescens*:-- Preudhomme de Borre: 25 (list)  
*Arthrosphaera lutescens*:-- Pocock 1899: 274 (new combination)  
*Arthrosphaera lutescens*:-- Attems 1914: 148 (list)  
*Arthrosphaera lutescens*:-- Attems 1936: 155 (new locality)  
*Arthrosphaera* [sic!] *lutescens*:-- Gowri & Sethuramkrishnan 1980: 113 (hormones)  
*Arthrosphaera lutescens*:-- Sarasu & Sivagamasundari 1982: 74 (eggs)  
*Arthrosphaera lutescens*:-- Bano 1983: 168 (list)  
*Arthrosphaera lutescens*:-- Rangaswamy et al. 1983: 7 (distribution)  
*Arthrosphaera lutescens*:-- Achar 1986: 90 (cytology)  
*Arthrosphaera lutescens*:-- Jeekel 2001: 10 (list)  
*Arthrosphaera lutescens*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera lutescens*:-- Kadamannaya et al. 2012: 183 (morphology)  
*Arthrosphaera lutescens*:-- Ambarish & Sridhar 2013a: 64 (distribution, behaviour)  
*Arthrosphaera lutescens*:-- Ambarish et al. 2013: 205 (cytology)  
*Arthrosphaera lutescens*:-- Sridhar 2015: 3 (list)  
*Arthrosphaera lutescens*:-- Sridhar & Ashwini 2016: 18 (list)  
 ---- *Zephronia heterostictica* [sic!] (misidentification, e.p.) Pocock, 1892: 145. **NOT** *Zephronia heterostictica* Newport, 1844.

Remark: According to Pocock (1892) potentially a synonym of *A. heterosticta*.

Types: Holotype of unknown sex.

Habitat: India: Maddathoray; Kulattupuzha, Western Ghats, Travancore.  
Details: NHML.

***Arthrosphaera madura*** Pandian, 1966

*Arthrosphaera madura* Pandian, 1966: 465 (first descrip.)  
*Arthrosphaera madura*:-- Rajulu 1970: 126 (list)  
*Arthrosphaera madura*:-- Rangaswamy et al. 1983: 6 (distribution).

Types: Unknown number of male and female type specimens.

Habitat: India, Madurai, Algarkoil hills, Pazhamudir Solai.

Deposited: Indian Museum Calcutta (Pandian 1966: 468), now Zoological Survey of India, Kolkata.

***Arthrosphaera magna*** Attems, 1936

*Arthrosphaera magna* Attems, 1936: 160 (first description)

*Arthrosphaera magna*:-- Rajulu 1970: 124 (list)  
*Arthrosphaera magna*:-- Bano 1983: 168 (list)  
*Arthrosphaera magna*:-- Achar 1986: 90 (cytology)  
*Arthrosphaera magna*:-- Mary Bai 1997: 461 (list)  
*Arthrosphaera magna*:-- Jeekel 2001: 10 (list)  
*Arthrosphaera magna*:-- Ashwini & Sridhar 2002: 20 (ecology)  
*Arthrosphaera magna*:-- Ashwini & Sridhar 2005: 307 (ecology)  
*Arthrosphaera magna*:-- Ashwini & Sridhar 2006a: 954 (ecology)  
*Arthrosphaera magna*:-- Ashwini & Sridhar 2006b: 27 (ecology)  
*Arthrosphaera magna*:-- Ashwini & Sridhar 2006c: 59 (ecology)  
*Arthrosphaera magna*:-- Ashwini & Sridhar 2008: 749 (distribution)  
*Arthrosphaera magna*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera magna*:-- Kadamannaya et al. 2010b: 245 (ecology)  
*Arthrosphaera magna*:-- Kämpfer et al. 2010: 1765 (bacteria)  
*Arthrosphaera magna*:-- Kämpfer et al. 2011: 1334 (bacteria)  
*Arthrosphaera magna*:-- Ramanathan & Alagesan 2011: 365 (ecology)  
*Arthrosphaera magna*:-- Ramanathan & Alagesan 2012: 57 (bacteria)  
*Arthrosphaera magna*:-- Alagesan & Ramanathan 2013: 2 (distribution)  
*Arthrosphaera magna*:-- Ambarish & Sridhar 2013a: 64 (distribution, behaviour)

*Arthrosphaera magna*:-- Ambarish & Sridhar 2013b: 258 (ecology)

*Arthrosphaera magna*:-- Sridhar & Ambarish 2013: 1544 (ecology)

*Arthrosphaera magna*:-- Sridhar et al. 2013: 539 (ecology)

*Arthrosphaera magna*:-- Ambarish & Sridhar 2014b: 49 (cytology)

*Arthrosphaera magna*:-- Ambarish & Sridhar 2014c: 15 (behaviour)

*Arthrosphaera magna*:-- Sridhar 2015: 3 (list)

*Arthrosphaera magna*:-- Ambarish & Sridhar 2015a: 642 (ecology)

*Arthrosphaera magna*:-- Ambarish & Sridhar 2015b: 118 (physiology)

*Arthrosphaera magna*:-- Ambarish & Sridhar 2015c: (distribution)

*Arthrosphaera magna*:-- Ambarish & Sridhar 2016: 105 (behavior)

*Arthrosphaera magna*:-- Sridhar & Ashwini 2016: 19 (list).

Types: M and F syntypes.

Habitat: India: Khandala, Lonavla, Bombay Presidency; Shevaroy Hills, S. India; Rajamandri, Madras Presidency; Phenda Ghat, Kolhapur State, Bombay Presidency.  
Deposited: NHMW 2210 (Stagl & Schiller, in prep.).

***Arthrosphaera marginella*** Silvestri, 1897

*Arthrosphaera marginella* Silvestri, 1897b: 360 (first description)

*Arthrosphaera marginella*:-- Pocock 1899: 285;

*Arthrosphaera marginella*:-- Attems 1914: 148 (list);

*Arthrosphaera marginella*:-- Attems 1936: 166 (list)

*Arthrosphaera marginella*:-- Jeekel 2001: 10 (list)

*Arthrosphaera marginella*:-- Sridhar & Kadamannaya 2009: 69 (list)

*Arthrosphaera marginella*:-- Sridhar 2015: 3 (list)

*Arthrosphaera marginella*:-- Sridhar & Ashwini 2016: 19 (list).

Types: F holotype.

Habitat: "India?"

Deposited: IRSN.

***Arthrosphaera marmorata*** (Butler, 1882)

*Zephronia marmorata* Butler, 1882: 197 (first description)

*Zephronia marmorata*:-- Preudhomme de Borre: 25 (list)

*Arthrosphaera marmorata*:-- Pocock 1899: 274 (new combination)

*Arthrosphaera marmorata*:-- Attems 1914: 148 (list)

*Arthrosphaera marmorata*:-- Attems 1936: 166 (list)

*Arthrosphaera marmorata*:-- Rajulu 1970: 126 (list)



*Arthrosphaera marmorata*:-- Jeekel 2001: 10 (list)  
*Arthrosphaera marmorata*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera marmorata*:-- Sridhar 2015: 3 (list)  
*Arthrosphaera marmorata*:-- Sridhar & Ashwini 2016: 19 (list).

Types: Syntypes (not well-preserved).  
 Habitat: India.  
 Deposited: NHML.

*Arthrosphaera nitida* Pocock, 1895  
*Arthrosphaera nitida* Pocock, 1895: 411 (first description)  
*Arthrosphaera nitida*:-- Pocock 1899: 281 (list)  
*Arthrosphaera nitida*:-- Attems 1914: 148 (list)  
*Arthrosphaera nitida*:-- Attems 1936: 166 (list)  
*Arthrosphaera nitida*:-- Rajulu 1970: 126 (list)  
*Arthrosphaera nitida*:-- Demange 1977: 231 (new local.)  
*Arthrosphaera nitida*:-- Bano 1983: 168 (list)  
*Arthrosphaera nitida*:-- Janardanan & Ramachandran 1983: 408 (parasites)  
*Arthrosphaera nitida*:-- Achar 1986: 90 (cytology)  
*Arthrosphaera nitida*:-- Jeekel 2001: 10 (list)  
*Arthrosphaera nitida*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera nitida*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera nitida*:-- Sridhar & Ashwini 2016: 19 (list).

Types: Holotype of unknown sex.  
 Habitat: India: Kodaikanal, Palnai Hills.  
 Deposited: NHML.

*Arthrosphaera noticeps* (Butler, 1872)  
*Zephronia noticeps* Butler, 1872: 355 (first description)  
*Zephronia noticeps*:-- Butler 1873: 178 (description)  
*Zephronia noticeps*:-- Preudhomme de Borre 1884: 25 (list)  
*Arthrosphaera noticeps*:-- Pocock 1899: 271 (new combination)  
*Arthrosphaera noticeps*:-- Attems 1914: 148 (list)  
*Arthrosphaera noticeps*:-- Attems 1936: 166 (list)  
*Arthrosphaera noticeps*:-- Jeekel 2001: 10 (list)  
*Arthrosphaera noticeps*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera noticeps*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera noticeps*:-- Sridhar & Ashwini 2016: 19 (list)  
*Arthrosphaera noticeps*:-- De Zoysa et al. 2016: 455 (list).

Types: F holotype.  
 Habitat: Sri Lanka.  
 Deposited: NHML.

*Arthrosphaera pelloceps* (Chamberlin, 1921)  
*Trochosoma pelloceps* Chamberlin, 1921: 56 (first description)  
*Trochosoma pelloceps*:-- Attems 1936: 192 (list)  
*Arthrosphaera pelloceps*:-- Jeekel 2001: 10 (new combination).

Types: M holotype and F paratype.  
 Habitat: India: Periakulum, South India.  
 Deposited: Holotype MCZ 4694, paratype MCZ 4695.

*Arthrosphaera pilifera* (Butler, 1872)  
*Zephronia pilifera* Butler, 1872: 357 (first description)  
*Zephronia pilifera*:-- Butler 1873: 180 (description)  
*Zephronia pilifera*:-- Preudhomme de Borre 1884: 25 (list)  
*Arthrosphaera pilifera*:-- Pocock 1899: 270 (new comb.)  
*Arthrosphaera pilifera*:-- Attems 1914: 149 (list)  
*Arthrosphaera pilifera*:-- Attems 1936: 166 (list)  
*Arthrosphaera pilifera*:-- Jeekel 2001: 11 (list)  
*Arthrosphaera pilifera*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera pilifera*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera pilifera*:-- Sridhar & Ashwini 2016: 19 (list)  
*Arthrosphaera pilifera*:-- De Zoysa et al. 2016: 455 (list).

Types: F holotype.  
 Habitat: Sri Lanka.  
 Deposited: NHML?

*Arthrosphaera pygostolis* Attems, 1935  
*Arthrosphaera pygostolis* Attems, 1935: 141 (first description)  
*Arthrosphaera pygostolis*:-- Attems 1936: 167 (list)  
*Arthrosphaera pygostolis*:-- Rajulu 1970: 127 (list)  
*Arthrosphaera pygostolis*:-- Jeekel 2001: 11 (list)  
*Arthrosphaera pygostolis*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera pygostolis*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera pygostolis*:-- Sridhar & Ashwini 2016: 19 (list).

Types: F holotype.  
 Habitat: India: Ramandroog, Madras Presidency.  
 Deposited: NHMW?

*Arthrosphaera ruginosa* Jeekel, 2001  
*Arthrosphaera ruginosa* Jeekel, 2001: 11 (first description)  
 ---- *Zephronia rugulosa*:-- Butler, 1872: 355 (first description, e. p.)  
*Zephronia rugulosa*:-- Preudhomme de Borre 1884: 25 (list)

**NOT** *Zephronia rugulosa* Gervais, 1847: 82 (= *Sphaerotherium rugulosum* Brandt, 1841: 363).  
*Arthrosphaera rugulosa*:-- Pocock 1899: 273 (new combination)  
*Arthrosphaera rugulosa*:-- Attems 1914: 149 (list)  
*Arthrosphaera rugulosa*:-- Attems 1936: 166 (list)  
*Arthrosphaera rugulosa*:-- Jeekel 2001: 11 (list)  
*Arthrosphaera rugulosa*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera rugulosa*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera rugulosa*:-- Sridhar & Ashwini 2016: 19 (list)  
*Arthrosphaera rugulosa*:-- De Zoysa et al. 2016: 456 (list)  
 ---- *Zephronia brandtii* Pocock 1892: 143 (misidentification), **NOT** *Sphaeropoeus brandtii* Humbert, 1865.

Remarks: According to Pocock (1899), most likely a synonym of *A. brandtii*.

Types: Immature holotype of unknown sex.  
 Habitat: Sri Lanka  
 Deposited: NHML.

***Arthrosphaera rugosa*** Verhoeff, 1930  
*Arthrosphaera rugosa* Verhoeff, 1930: 209 (first description)  
*Arthrosphaera rugosa*:-- Attems 1936: 166 (list)  
*Arthrosphaera rugosa*:-- Jeekel 2001: 11 (list)  
*Arthrosphaera rugosa*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera rugosa*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera rugosa*:-- Sridhar & Ashwini 2016: 19 (list)  
*Arthrosphaera rugosa*:-- De Zoysa et al. 2016: 456 (list).

Types: M holotype.  
 Habitat: Sri Lanka.  
 Deposited: Unknown.

***Arthrosphaera scholastica*** Attems, 1936  
*Arthrosphaera scholastica* Attems, 1936: 157 (first description)  
*Arthrosphaera schlostica* [sic!]:-- Rajulu 1970: 124 (list)  
*Arthrosphaera scholastica*:-- Jeekel 2001: 11 (list)  
*Arthrosphaera scholastica*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera scholastica*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera scholastica*:-- Sridhar & Ashwini 2016: 19 (list).

Types: M and F syntypes  
 Habitat: India: Marian Shola, Palni Hills, South India.  
 Deposited: NHMW 2211 (Stagl & Schiller, in prep.).

***Arthrosphaera severa*** Attems, 1935  
*Arthrosphaera severa* Attems, 1935: 139 (first description)  
*Arthrosphaera severa*:-- Attems 1936: 167 (list)  
*Arthrosphaera severa*:-- Rajulu 1970: 126 (list)  
*Arthrosphaera severa*:-- Jeekel 2001: 11 (list)  
*Arthrosphaera severa*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera severa*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera severa*:-- Sridhar & Ashwini 2016: 19 (list).

Types: M and F syntypes.  
 Habitat: India: Ramandroog, Madras Presidency.  
 Deposited: NHMW 2212 (Stagl & Schiller, in prep.).

***Arthrosphaera silvestrii*** Jeekel, 2001  
 ---- *Arthrosphaera corrugata* Silvestri, 1897b: 359 (first descrip., e. p.), **NOT** *Zephronia corrugata* Butler, 1872  
*Arthrosphaera corrugata*:-- Pocock 1899: 285 (list)  
*Arthrosphaera corrugata*:-- Attems 1914: 147 (list)  
*Arthrosphaera corrugata*:-- Attems 1936: 165 (list)  
*Arthrosphaera corrugata*:-- Sridhar 2015: 3 (list).

Types: M holotype?  
 Habitat: "India?".  
 Deposited: IRSN.

***Arthrosphaera stridula*** (Verhoeff, 1937)  
*Trivandrobium stridulum* Verhoeff, 1937: 83 (first description)  
*Arthrosphaera stridula*:-- Jeekel 2001: 11 (new comb.)  
*Arthrosphaera indica*:-- Jeekel 2001: 9 (nomen nudum).

Remarks: Jeekel (2001) in his list of SE Asian Sphaerotheriida apparently mistook an erroneous figure label in Verhoeff's description of *Trivandrobium stridulum* (Verhoeff 1937: fig. 2) stating the name "Arthrosphaera indica" as a new description. Because the same figure label says earlier *Trivandrobium stridulum* n. g. n. sp. and is located in the text description of *T. stridulum* I regard the label "Arthrosphaera indica" as a printer's error and not a valid species name.

Types: M holotype.  
 Habitat: India: Nedumangad, E. of Trivandrum.  
 Deposited: Unknown.

***Arthrosphaera thurstoni*** Pocock, 1895  
*Arthrosphaera thurstoni* Pocock, 1895: 411 (first descrip.)  
*Arthrosphaera thurstoni*:-- Pocock 1899: 276 (redescription, new locality)  
*Arthrosphaera thurstoni*:-- Attems 1914: 149 (list)  
*Arthrosphaera thurstoni*:-- Attems 1936: 166 (list)

*Arthrosphaera thurstoni*:-- Rajulu 1970: 126 (list)  
*Arthrosphaera thurstoni*:-- Jeekel 2001: 11 (list)  
*Arthrosphaera thurstoni*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera thurstoni*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera thurstoni*:-- Sridhar & Ashwini 2016: 19 (list).

Types: M and F syntypes.

Habitat: India: Nilghiri Hills; Dimhutti, near Kotagiri, Nilghiri Hills; Yercand, Sheveroy Hills.

Deposited: NHML?

***Arthrosphaera transitiva* Attems, 1936**

*Arthrosphaera transitiva* Attems, 1936: 160 (first descrip.)  
*Arthrosphaera transitiva*:-- Rajulu 1970: 124 (list)  
*Arthrosphaera transitiva*:-- Varadaraj et al. 1983: 197 (haemocytos)  
*Arthrosphaera transitiva*:-- Jeekel 2001: 12 (list)  
*Arthrosphaera transitiva*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera transitiva*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera transitiva*:-- Sridhar & Ashwini 2016: 19 (list).

Types: F holotype.

Habitat: India: Ganjam, Madras Presidency.

Deposited: Indian Museum Calcutta? (now Zoological Survey of India, Kolkata).

***Arthrosphaera versicolor* (White, 1895)**

*Zephronia versicolor* White, 1859: 405 (first description)  
*Zephronia versicolor*:-- Humbert 1865: 41 (description)  
*Zephronia versicolor*:-- Preudhomme de Borre 1884: 25 (list)  
*Arthrosphaera versicolor*:-- Pocock 1899: 272 (new combination, new locality)  
*Arthrosphaera versicolor*:-- Attems 1914: 149 (list)  
*Arthrosphaera versicolor*:-- Attems 1936: 167 (list)  
*Arthrosphaera versicolor*:-- Jeekel 2001: 12 (list)  
*Arthrosphaera versicolor*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera versicolor*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera versicolor*:-- Ambarish & Sridhar 2015c: (distribution)  
*Arthrosphaera versicolor*:-- Sridhar & Ashwini 2016: 19 (list)  
*Arthrosphaera versicolor*:-- De Zoysa et al. 2016: 456 (list).

Types: M holotype?

Habitat: Sri Lanka: Peradenia.

Deposited: NHML?

***Arthrosphaera wroughtoni* Pocock, 1895**

*Arthrosphaera wroughtoni* Pocock, 1895: 411 (first description)  
*Arthrosphaera wroughtoni*:-- Pocock 1899: 275 (description)  
*Arthrosphaera wroughtoni*:-- Attems 1914: 149 (list)  
*Arthrosphaera wroughtoni*:-- Attems 1936: 167 (list)  
*Arthrosphaera wroughtoni*:-- Rajulu 1970: 126 (list)  
*Arthrosphaera wroughtoni*:-- Jeekel 2001: 12 (list)  
*Arthrosphaera wroughtoni*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera wroughtoni*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera wroughtoni*:-- Sridhar & Ashwini 2016: 19 (list).

Types: M holotype.

Habitat: India: Kanara.

Deposited: NHML?

***Arthrosphaera zebraica* (Butler, 1872)**

*Zephronia zebraica* Butler, 1872: 356 (first description)  
*Zephronia zebraica*:-- Preudhomme de Borre 1884: 25 (list)  
*Arthrosphaera zebraica*:-- Pocock, 1899: 275 (new combination)  
*Arthrosphaera zebraica*:-- Attems 1914: 149 (list)  
*Arthrosphaera zebraica*:-- Attems 1936: 167 (list)  
*Arthrosphaera zebraica* [sic!]:-- Karandikar & Rodgi 1955: 27 (parasites)  
*Arthrosphaera zebraica*:-- Chowdaiah 1966: 847 (cytology)  
*Arthrosphaera zebraica*:-- Rajulu 1970: 126 (list)  
*Arthrosphaera zebraica*:-- Kunte 1974: 673 (list)  
*Arthrosphaera zebraica*:-- Rangaswamy et al. 1978: 98 (distribution)  
*Arthrosphaera zebraica*:-- Bano 1983: 168 (list)  
*Arthrosphaera zebraica*:-- Rangaswamy et al. 1983: 7 (distribution)  
*Arthrosphaera zebraica*:-- Jeekel 2001: 12 (list)  
*Arthrosphaera zebraica*:-- Sridhar & Kadamannaya 2009: 69 (list)  
*Arthrosphaera zebraica*:-- Kadamannaya et al. 2012: 183 (morphology)  
*Arthrosphaera zebraica*:-- Ambarish & Sridhar 2013a: 64 (distribution, behaviour)  
*Arthrosphaera zebraica*:-- Sridhar 2015: 4 (list)  
*Arthrosphaera zebraica*:-- Sridhar & Ashwini 2016: 19 (list).

Types: M holotype.

Habitat: India: Bombay.

Deposited: NHML.



**Genus *Sphaeromimus***  
**de Saussure & Zehntner, 1902**

*Sphaeromimus* de Saussure & Zehntner, 1902: 20 (first description); Attems 1926: 119 (list); Attems 1942: 60 (list); Jeekel 1971: 28 (list); Jeekel 1974: 45 (classification); Hoffman 1980: 63 (list); Jeekel 1999: 8 (catalogue, discussion); Enghoff 2003: 618 (list); Wesener & Sierwald 2005b: 557 (redescription, additional species); Wesener & Wägele 2007: 147 (ecology); Wesener 2009: 8 (key); Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis); Wesener et al. 2010b: 1185 (molecular phylogenetic analysis); Wesener 2014a: 199 (morphological phylogenetic analysis); Wesener et al. 2014: 72 (revision, additional species).

**Description:** Anterior telopod with four podomeres distal to syncoxite, telopoditome 4 always with three spines in special positions. Harp carrying 3–10 stridulation ribs. Posterior telopods with three telopoditomes, 3rd carrying two membranous lobes. Operculum of vulva greatly enlarged and well-rounded, often larger than bursa. Inner plate of vulva not protruding. Female washboard with 8–20 stridulation ribs. Legs with a coxal lobe, tarsi very wide, paddle-like. Underside of anal shield with a single, short, locking carina. First antennomere with neither a groove nor scales, nor sensilla basiconica. Antennomere 6 large and flattened, but not axe-shaped. Number of apical cones sexually dimorphic, females with 40–50, males with 80–90. 20–40 mm long.

**Type species:** *Sphaeropoeus musicus* de Saussure & Zehntner, 1897, by monotypy.

**Distribution:** S and SE Madagascar

**Species included (10)**

*Sphaeromimus andohahela* Wesener, 2014  
*Sphaeromimus andrahomana* Wesener, 2014  
*Sphaeromimus inexpectatus* Wesener & Sierwald, 2005  
*Sphaeromimus ivohibe* Wesener, 2014  
*Sphaeromimus lavasoa* Wesener, 2014  
*Sphaeromimus musicus* (de Saussure & Zehntner, 1897)  
*Sphaeromimus saintelucei* Wesener, 2014  
*Sphaeromimus splendidus* Wesener & Sierwald, 2005  
*Sphaeromimus titanus* Wesener, 2014  
*Sphaeromimus vatovavy* Wesener, 2014

***Sphaeromimus andohahela*** Wesener, 2014  
(Fig. 13F)

*Sphaeromimus* ‘n. sp. I Manantantely’; *Sphaeromimus* ‘n. sp. II Malio’-- Wesener et al. 2010: 1185 (molecular phylogenetic analysis)

*Sphaeromimus andohahela* Wesener et al. 2014: 89 (first description).

Types: M holotype, 4 F, 3 imm. paratypes.

Localities: Madagascar, Province Toliara, PN Andohahela, Isaka-Ivondro Nord (Type), Malio, Manantantely  
Deposited: ZFMK MYR2322 (holotype); FMNH-INS 61135 (1 F paratype); FMNH-INS 61136 (1 imm. paratype); FMNH-INS 61137 (1 F paratype); FMNH-INS 56212 (2 F, 2 imm. paratypes)

***Sphaeromimus andrahomana*** Wesener, 2014

*Sphaeromimus* ‘n. sp. V Grotte’-- Wesener et al. 2010: 1185 (molecular phylogenetic analysis)

*Sphaeromimus andrahomana* Wesener et al. 2014: 98 (first description).

Types: M holotype.

Localities: Madagascar, Province Toliara, N of Ankapaky (type), Grotte d’Andrahomana.

Deposited: FMNH-INS 56214 (holotype).

***Sphaeromimus inexpectatus*** Wesener & Sierwald, 2005  
(Fig. 13D)

*Sphaeromimus inexpectatus* Wesener & Sierwald, 2005b: 570 (first description)

*Sphaeromimus inexpectatus*-- Wesener & Wägele 2007: 150 (ecology)

*Sphaeromimus inexpectatus*-- Wesener 2009: 131 (list)

*Sphaeromimus inexpectatus*-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)

*Sphaeromimus inexpectatus*-- Wesener et al. 2010b: 1185 (molecular phylogenetic analysis)

*Sphaeromimus inexpectatus*-- Temple et al. 2012: 37: 1185 (conservation)

*Sphaeromimus inexpectatus*-- Wesener 2014a: 199 (morphological phylogenetic analysis)

*Sphaeromimus inexpectatus*-- Wesener et al. 2014: 76 (additional specimens).

Types: M holotype, 1 F paratype (fragmented).

Localities: Madagascar, Province Toliara, Mandena littoral rainforest (Type); Enato.

Deposited: FMNH-INS 6701.

***Sphaeromimus ivohibe*** Wesener, 2014

*Sphaeromimus ivohibe* Wesener et al. 2014: 93 (first description).

Types: M holotype.

Localities: Madagascar, Province Fianarantsoa, RS de Ivohibe.

Deposited: FMNH-INS 8184.

***Sphaeromimus lavasoa*** Wesener, 2014

(Fig. 13E)

*Sphaeromimus* 'n. sp. III G-Lavasoa':-- Wesener et al. 2010: 1185 (molecular phylogenetic analysis)*Sphaeromimus lavasoa* Wesener et al. 2014: 84 (first description).

Types: M holotype, 40 M &amp; F paratypes.

Localities: Madagascar, Province Toliara, Ambitsoron-gorongo, Grande Lavasoa (Type), Petit Lavasoa.

Deposited: ZFMK MYR2320 (holotype); ZFMK MYR2321 (2 F paratypes); FMNH-INS 61141 (1 M paratype); FMNH-INS 61134 (1 M paratype); FMNH-INS 61142 (1 F paratype); FMN-INS 61143 (1 F paratype); FMNH-INS 56213 (1 F paratype); FMNH-INS 56208 (35 M &amp; F paratypes).

***Sphaeromimus musicus*** (de Saussure & Zehntner, 1897) (Figs 12B, 13A)*Sphaeropoeus musicus* de Saussure & Zehntner, 1897: pl. 4, fig. 1 a–e (first description)*Sphaeromimus musicus*:-- de Saussure & Zehntner 1902: 75 (description)*Sphaeromimus musicus*:-- Jeekel 1999: 8 (list)*Sphaeromimus musicus*:-- Enghoff 2003: 618 (list)*Sphaeromimus musicus*:-- Wesener & Sierwald 2005b: 564 (redescription)*Sphaeromimus musicus*:-- Wesener 2009: 131 (list)*Sphaeromimus musicus*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)*Sphaeromimus musicus*:-- Wesener et al. 2010b: 1185 (molecular phylogenetic analysis)*Sphaeromimus musicus*:-- Wesener 2014a: 199 (morphological phylogenetic analysis)*Sphaeromimus musicus*:-- Wesener et al. 2014: 75 (revision, new localities).

Types: M holotype.

Localities: Madagascar (Type), S Madagascar spiny forest ecosystem.

Deposited: MNHN CH038.

***Sphaeromimus saintelucei*** Wesener, 2014*Sphaeromimus saintelucei* Wesener et al. 2014: 96 (first description).

Types: M holotype, 2 M, 1 ? paratypes.

Localities: Madagascar, Province Toliara, Sainte Luce littoral rainforest, fragment S9.

Deposited: ZFMK MYR889 (holotype); FMNH-INS 61089 (1 M paratype); FMNH-INS 61088 (1 ? paratype).

***Sphaeromimus splendidus*** Wesener & Sierwald, 2005 (Fig. 13C)*Sphaeromimus splendidus* Wesener & Sierwald, 2005b: 567 (first description)*Sphaeromimus splendidus*:-- Wesener & Wägele 2007: 150 (ecology)*Sphaeromimus splendidus*:-- Wesener 2009: 131 (list)*Sphaeromimus splendidus*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)*Sphaeromimus splendidus*:-- Wesener et al. 2010b: 1185 (molecular phylogenetic analysis)*Sphaeromimus splendidus*:-- Wesener 2014a: 199 (morphological phylogenetic analysis)*Sphaeromimus splendidus*:-- Wesener et al. 2014: 75 (additional specimens).

Types: 1 F holotype, 1 M, 3 F paratypes.

Localities: Madagascar, Province Toliara, Sainte Luce littoral rainforest, fragment S9.

Deposited: FMNH-INS 6702 (holotype); 1 M, 2 F paratypes FMNH-INS 6703; 1 F paratype CAS.

***Sphaeromimus titanus*** Wesener, 2014*Sphaeromimus titanus* Wesener et al. 2014: 77 (first description).

Types: M holotype, F paratype.

Localities: Madagascar, Province Fianarantsoa, Manombo.

Deposited: CAS ENT 9032789.

***Sphaeromimus vatovavy*** Wesener, 2014*Sphaeromimus vatovavy* Wesener et al. 2014: 81 (first description).

Types: M holotype, F paratype.

Localities: Madagascar, Province Fianarantsoa, Tsianovoha (Fort Carnot).

Deposited: MNHN '39'.

**Genus *Microsphaerotherium***  
**Wesener & VandenSpiegel, 2007***Microsphaerotherium* Wesener & VandenSpiegel, 2007: 153 (first description); Wesener 2009: 8 (key); Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis); Wesener 2014a: 199 (morphological phylogenetic analysis).**Description:** Anterior telopod with three podomeres distal to syncoxite. Harp carrying a single stridulation rib. Posterior telopods with three telopoditomeres, 3rd with a

single membranous lobe. Operculum of vulva narrow, inner plate of vulva protruding. 4–6 discontinuous ribs on female washboard. Legs without a coxal lobe, tarsi always long and slender. Underside of anal shield with a single (often fused) locking carina, this being very long, sometimes connecting with the locking carina from the other side. Surface of tergites covered with special tiny ‘rotated’ (helicoid) setae, dorsally with a sclerotized crest. First antennomere with a groove, few sensilla basiconica, and isolated sclerotized scales. All antennomeres cylindrical, with 5–10 apical cones. Smallest known sphaerotheriids.

**Type species:** *Microsphaerotherium ivohibiense* Wesener & VandenSpiegel, 2007, by monotypy.

**Distribution:** Central Madagascar

### Species included (2)

*Microsphaerotherium anjozorobe* Wesener 2009

*Microsphaerotherium ivohibiense* Wesener & VandenSpiegel, 2007

*Microsphaerotherium anjozorobe* Wesener, 2009

*Microsphaerotherium anjozorobe* Wesener, 2009: 9 (first description).

Types: M holotype, 1 M paratype.

Localities: Madagascar, Province d’Antananarivo, 3 km NE Andranomay, 1300 m.

Deposited: CAS BLF 2370 & 2371.

*Microsphaerotherium ivohibiense* Wesener & VandenSpiegel, 2007

*Microsphaerotherium ivohibiensis* [sic!] Wesener & VandenSpiegel, 2007: 154 (first description)

*Microsphaerotherium ivohibiense*:-- Wesener 2009: 131 (list)

*Microsphaerotherium ivohibiense*:-- Wesener & VandenSpiegel 2009: 548 (morpholog. phylogenetic analysis)

*Microsphaerotherium ivohibiense*:-- Wesener 2014a: 199 (morphological phylogenetic analysis).

Types: M holotype, 1 M paratype.

Localities: Madagascar, Province Fianarantsoa, RS Ivohibe, 1200 m.

Deposited: FMNH-INS 4011.

### Genus *Zoosphaerium* Pocock, 1895

(Figs 14A–H)

*Zoosphaerium* Pocock, 1895: 410 (first description). Chamberlin 1921: 59 (additional species); Jeekel 1971: 29

(list); Jeekel 1974: 45 (classification); Hoffman 1980: 63 (list); Jeekel 1999: 5 (catalogue); Thorstrom & Lind 1999: 572 (predation birds); Shelley et al. 2000: 13 (catalogue); Enghoff 2003: 618 (list); Wesener & Sierwald 2005a: 3 (additional species); Wesener & Wägele 2007: 147 (ecology); Wesener & Wägele 2008: 9 (redescription); Wesener 2009: 1 (additional species); Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis); Wesener et al. 2010a: 133 (additional species); Wesener et al. 2010b: 1185 (molecular phylogenetic analysis); Wesener 2014a: 199 (morphological phylogenetic analysis); Koch 2015: 12 (morphology).

### Synonyms:

---- *Globotharium* Brolemann, 1922: 230 (first description), tentatively synonymized with *Zoosphaerium* by Jeekel 1999: 9. Attems 1926: 119 (list); Attems 1942: 60 (list); Jeekel 1971: 29 (list); Jeekel 1974: 45 (classification); Hoffman 1980: 63 (list); Enghoff 2003: 619, tables 8–19 (all *Globotharium* species assigned to *Zoosphaerium*); Wesener & Wägele 2008: 9 (formal synonymization with *Zoosphaerium*).

Type species: *Sphaerotherium digitale* de Saussure & Zehntner, 1897, synonymized under *Sphaerotherium neptunus* Butler, 1872 by Wesener & Wägele 2008: 10.

---- *Heligmasoma* Chamberlin, 1921: 58 (first description), formal synonymization with *Zoosphaerium* by Wesener & Wägele 2008: 9. Jeekel 1971: 29 (list); Jeekel 1974: 45 (classification); Hoffman 1980: 63 (list).

Type species: *Heligmasoma errans* Chamberlin, 1921, synonymized under *Sphaerotherium coquerelium* de Saussure & Zehntner, 1897 by Wesener & Wägele 2008: 38.

**Description:** Anterior telopod with three podomeres distal to syncoxite. Harp carrying one or two stridulation ribs (one species with three). Posterior telopods with three telopoditomers, 3rd extremely variable, but at least in one species group (the *libidinosum* group) carrying two membranous lobes. Operculum of vulva of variable size, but apical margin always with a median notch. Inner plate of vulva protruding. Female washboard with 2–8 stridulation ribs. Legs without a coxal lobe, tarsi always long and slender. Underside of anal shield with two locking carinae, posterior one usually 2–3 times larger than anterior one. First antennomere with a groove, covered with sclerotized scales. Isolated sensilla basiconica are always present on first antennomere, rarely also on antennomere 4 or 5. All antennomeres cylindrical, with four or 15–50 apical cones. Usually 20–50, giant species 70–100 mm long.

**Type species:** *Sphaerotherium neptunus* Butler, 1872, by subsequent designation by Pocock 1895.

**Distribution:** Madagascar



**Species included (54 & 11 nomina dubia)**

*Zoosphaerium campamulatum* (de Saussure & Zehntner, 1897)  
*Zoosphaerium neptunus* (Butler, 1872)

*Zoosphaerium album* Wesener, 2009  
*Zoosphaerium anomalum* (de Saussure & Zehntner, 1902)  
*Zoosphaerium arborealis* Wesener & Sierwald, 2005  
*Zoosphaerium aureum* Wesener, 2009  
*Zoosphaerium discolor* Wesener, 2009  
*Zoosphaerium endemicum* Wesener, 2009  
*Zoosphaerium haackeri* Wesener, 2009  
*Zoosphaerium lambertoni* (Brolemann, 1922)  
*Zoosphaerium libidinosum* (de Saussure & Zehntner, 1897)  
*Zoosphaerium mitoho* Wesener, 2009  
*Zoosphaerium priapus* (de Saussure & Zehntner, 1897)  
*Zoosphaerium pseudopriapus* Wesener, 2009  
*Zoosphaerium pulchellum* Wesener, 2009  
*Zoosphaerium xerophilum* Wesener, 2009

*Zoosphaerium broelemanni* Wesener, 2009  
*Zoosphaerium corystoides* Wesener, 2009  
*Zoosphaerium platylabum* (de Saussure & Zehntner, 1897)  
*Zoosphaerium pseudoplatylabum* Wesener, 2009  
*Zoosphaerium solitarium* Wesener, 2009  
*Zoosphaerium tsingy* Wesener, 2009

*Zoosphaerium alluaudi* (de Saussure & Zehntner, 1902)  
*Zoosphaerium amabile* Wesener, 2009  
*Zoosphaerium ambrense* Wesener, 2009  
*Zoosphaerium bambusoides* Wesener & Bepalova, 2010  
*Zoosphaerium bilobum* Wesener, 2009  
*Zoosphaerium coquerelianum* (de Saussure & Zehntner, 1897)  
*Zoosphaerium denticulatum* Wesener, 2009  
*Zoosphaerium ignotum* Wesener, 2009  
*Zoosphaerium isalo* Wesener, 2009  
*Zoosphaerium muscorum* Wesener & Bepalova, 2010  
*Zoosphaerium smaragdinum* Wesener, 2009  
*Zoosphaerium tainkintana* Wesener, 2009  
*Zoosphaerium tampolo* Wesener, 2009  
*Zoosphaerium tigrioculatum* Wesener & Bepalova, 2010  
*Zoosphaerium trichordum* Wesener, 2009  
*Zoosphaerium villosum* Wesener & Sierwald, 2005  
*Zoosphaerium viridissimum* Wesener, 2009  
*Zoosphaerium voeltzkowianum* (de Saussure & Zehntner, 1897)

*Zoosphaerium blandum* (de Saussure & Zehntner, 1897)  
*Zoosphaerium pseudoblandum* Wesener, 2009

*Zoosphaerium micropiligerum* Wesener, 2009

*Zoosphaerium piligerum* (de Saussure & Zehntner, 1897)  
*Zoosphaerium pseudopiligerum* Wesener, 2009

*Zoosphaerium analavelona* Wesener, 2009  
*Zoosphaerium fisheri* Wesener, 2009  
*Zoosphaerium darthvaderi* Wesener & Bepalova, 2010  
*Zoosphaerium heleios* Wesener & Bepalova, 2010

*Zoosphaerium anale* (de Saussure & Zehntner, 1897)  
*Zoosphaerium fraternarium* Jeekel, 1999  
*Zoosphaerium immane* (Karsch, 1881)  
*Zoosphaerium sakamum* (Attems, 1910)  
*Zoosphaerium subreflexum* Jeekel, 1999

**Nomina dubia**

*Zoosphaerium actaeon* (White, 1859)  
*Zoosphaerium crassum* (Butler, 1878)  
*Zoosphaerium elegans* (Lenz, 1880)  
*Zoosphaerium glabrum* (Butler, 1873)  
*Zoosphaerium hippocastanum* (Gervais, 1847)  
*Zoosphaerium latum* (Butler, 1872)  
*Zoosphaerium lamprinum* (Butler, 1878)  
*Zoosphaerium reflexum* (Brolemann, 1922)  
*Zoosphaerium reticulatum* (Butler, 1878)  
*Zoosphaerium stigmaticum* (Butler, 1873)  
*Zoosphaerium testaceum* (Olivier, 1792)

**The *Zoosphaerium neptunus* species-group**  
Wesener & Wägele 2008: 9 (first description)

*Zoosphaerium neptunus* (Butler, 1872)  
*Sphaerotherium Neptunus* Butler, 1872: 358, pl. 18, fig. 6 (first description)  
*Sphaerotherium neptunus*:-- Butler 1873: 176 (list)  
*Sphaerotherium Neptunus*:-- Preudhomme de Borre 1884: 27 (catalogue)  
*Sphaerotherium neptunus*:-- de Saussure & Zehntner 1902: 67 (redescription)  
*Zoosphaerium neptunus*:-- Pocock 1895: 410 (type species of *Zoosphaerium*)  
*Zoosphaerium neptunus*:-- Jeekel 1999: 10 (list)  
*Zoosphaerium neptunus*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium neptunus*:-- Wesener & Wägele 2008: 10 (redescription)  
*Zoosphaerium neptunus*:-- Wesener 2009: 131 (list)  
*Zoosphaerium neptunus*:-- Wesener et al. 2010a: 159 (new locality)  
*Zoosphaerium neptunus*:-- Wesener & Schütte 2010: 89 (behaviour)  
---- *Sphaerotherium digitale* de Saussure & Zehntner, 1897: pl. 5, fig. 16 (first description), synonymization under *Sphaerotherium neptunus* by Wesener & Wägele 2008: 10

*Sphaerotherium digitale*:-- de Saussure & Zehntner 1902: 54 (description)

*Sphaerotherium (Globotharium) digitale*:-- Brolemann 1922: 232, figs 6–8 (type species of subgenus *Globotharium*)

*Zoosphaerium digitale*:-- Jeekel 1999: 13 (new combination, list)

*Zoosphaerium digitale*:-- Enghoff 2003: 620 (list)

---- *Sphaerotherium pygidiale* de Saussure & Zehntner, 1897: pl. 5, figs 8–8d (first description), synonymization under *Sphaerotherium neptunus* by Wesener & Wägele 2008: 10, with lectotype designation.

*Sphaerotherium pygidiale*:-- de Saussure & Zehntner 1902: 42, pl. 15, fig. 22 (description)

*Zoosphaerium pygidiale*:-- Jeekel 1999: 11 (new combination, list)

*Zoosphaerium pygidiale*:-- Enghoff 2003: 621 (list)

---- *Sphaerotherium lamprinum*:-- de Saussure & Zehntner 1897: pl. 5, figs 17–17b (redescription, misidentification). **NOT** *S. lamprinum* Butler, 1878.

---- *Sphaerotherium latum*:-- de Saussure & Zehntner 1897: pl. 5, fig. 14 (redescription, misidentification). **NOT** *S. latum* Butler, 1872.

---- *Sphaerotherium hippocastanum*:-- de Saussure & Zehntner 1897: pl. 5, fig. 15 (redescription, misidentification). **NOT** *S. hippocastanum* Gervais, 1847.

Types: 1 F holotype (broken).

Localities: Madagascar.

Deposited: NHML BM.1858.85.

*Zoosphaerium campanulatum* (de Saussure & Zehntner, 1897)

*Sphaerotherium campanulatum* de Saussure & Zehntner, 1897: pl. 4, figs 6–6b (first description)

*Sphaerotherium campanulatum*:-- de Saussure & Zehntner 1902: 28 (description)

*Sphaerotherium campanulatum*:-- Attems 1910: 75 (new locality)

*Zoosphaerium campanulatum*:-- Jeekel 1999: 9 (new combination)

*Zoosphaerium campanulatum*:-- Enghoff 2003: 620 (list)

*Zoosphaerium campanulatum*:-- Wesener & Wägele 2008: 19 (redescription)

*Zoosphaerium campanulatum*:-- Wesener 2009: 131 (list).

Types: M holotype.

Localities: Madagascar, côte sud-ouest.

Deposited: MNHN CB013.

The *Zoosphaerium libidinosum* species-group  
Wesener & Wägele 2008: 9 (key)

*Zoosphaerium album* Wesener, 2009

*Zoosphaerium album* Wesener, 2009: 18 (first descrip.).

Types: M holotype, numerous paratypes.

Localities: Madagascar, Province Toliara, Forêt Vohibasia.

Deposited: FMNH-INS 5457.

*Zoosphaerium anomalum* (de Saussure & Zehntner, 1902)

*Sphaerotherium anomalum* de Saussure & Zehntner, 1902: 56 (first description)

*Zoosphaerium anomalum*:-- Jeekel 1999: 13 (new combination)

*Zoosphaerium anomalum*:-- Enghoff 2003: 620 (list)

*Zoosphaerium anomalum*:-- Wesener & Wägele 2008: 34 (redescription)

*Zoosphaerium anomalum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)

*Zoosphaerium anomalum*:-- Wesener 2009: 131 (list).

Types: M holotype.

Localities: Madagascar, Province Toliara, Isaka.

Deposited: MNHN CB009.

*Zoosphaerium arborealis* Wesener & Sierwald, 2005

*Zoosphaerium arborealis* Wesener & Sierwald, 2005a: 34 (first description)

*Zoosphaerium arborealis*:-- Wesener & Wägele 2007: 148 (distribution)

*Zoosphaerium arborealis*:-- Wesener & Wägele 2008: 28 (list)

*Zoosphaerium arborealis*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)

*Zoosphaerium arborealis*:-- Wesener 2009: 131 (list).

Types: M holotype, 6 M, 17 F paratypes.

Localities: Madagascar, Tolagnaro, littoral forests of Mandena and Sainte Luce (type localities); PN Andringitra, Forêt d’Ravaro.

Deposited: Holotype FMNH-INS 8652. Paratypes: 2 M, 8 F FMNH-INS 56028; 1 M, 2 F CAS; 1 M, 2 F ZSM; 3 F SMNG VNR 13554; 2 M, 2 F FMNH-INS 8651.

*Zoosphaerium aureum* Wesener, 2009

*Zoosphaerium aureum* Wesener, 2009: 43 (first descrip.).

Types: M holotype, 4 M, 4 F paratypes.

Localities: Madagascar, Province Antsiranana, Montagne d’Ambre.

Deposited: Holotype and 3 M, 3 F paratypes ZMUC; 1 M, 1 F paratypes FMNH.

***Zoosphaerium discolor*** Wesener, 2009

*Zoosphaerium discolor* Wesener, 2009: 22 (first description).

Types: M holotype, numerous paratypes.

Localities: Madagascar, Province Mahajanga, PN Tsingy de Bemaraha.

Deposited: FMNH-INS 5454.

***Zoosphaerium endemicum*** Wesener, 2009

*Zoosphaerium endemicum* Wesener, 2009: 37 (first description).

Types: M holotype.

Localities: Madagascar, Province Toliara, Forêt Analavelona.

Deposited: FMNH-INS 5420.

***Zoosphaerium haackeri*** Wesener, 2009

Fig. 14A

*Zoosphaerium haackeri* Wesener, 2009: 16 (first description).

*Zoosphaerium haackeri*:-- Wesener et al. 2010b: 1187 (molecular phylogeny).

Types: M holotype.

Localities: Madagascar, Province Toliara, RS Cap Sainte Marie.

Deposited: CAS BLF 5499.

***Zoosphaerium lambertoni*** (Brolemann, 1922)

*Sphaerotherium (Globotherium) lambertoni* Brolemann, 1922: 235 (first description)

*Zoosphaerium lambertoni*:-- Jeekel 1999: 13 (new combination)

*Zoosphaerium lambertoni*:-- Enghoff 2003: 620 (list)

*Zoosphaerium lambertoni*:-- Wesener & Wägele 2008: 28 (list)

*Zoosphaerium lambertoni*:-- Wesener 2009: 131 (list).

Types: M holotype.

Localities: Madagascar, surroundings of Antananarivo.

Deposited: Académie Malgache (now zoological collection Tsimbazawa), presumably lost.

***Zoosphaerium libidinosum*** (de Saussure & Zehntner, 1897)

*Sphaerotherium libidinosum* de Saussure & Zehntner, 1897: pl. 4, fig. 2 (first description)

*Sphaerotherium libidinosum*:-- de Saussure & Zehntner 1901: 435 (new localities)

*Sphaerotherium libidinosum*:-- de Saussure & Zehntner 1902: 69 (description)

*Sphaerotherium libidinosum*:-- Attems 1910: 80 (list)

*Sphaerotherium (Globotherium) libidinosum*:-- Demange 1969: 485 (new locality)

*Zoosphaerium libidinosum*:-- Jeekel 1999: 12 (new combination)

*Zoosphaerium libidinosum*:-- Enghoff 2003: 620 (list)

*Zoosphaerium libidinosum*:-- Wesener & Wägele 2008: 22 (redescription)

*Zoosphaerium libidinosum*:-- Wesener 2009: 131 (list)

*Zoosphaerium libidinosum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis).

Types: 1 M lectotype, 5 M paralectotypes (designated by Wesener & Wägele 2008: 22).

Localities: Madagascar (Type), widespread in SW Madagascar spiny forest zone.

Depository: MNHN CB035.

***Zoosphaerium mitoho*** Wesener, 2009

*Zoosphaerium mitoho* Wesener, 2009: 27 (first description).

Types: M holotype, 1 M, 1 F paratypes.

Localities: Madagascar, Province Toliara, PN Tsimanampetsotsa, Mitoho Cave.

Depository: Type series CAS BLF 6163.

***Zoosphaerium priapus*** (de Saussure & Zehntner, 1897)

*Sphaerotherium priapus* de Saussure & Zehntner, 1897: pl. 4, fig. 5 (first description)

*Sphaerotherium priapus*:-- de Saussure & Zehntner, 1902: 61 (description)

*Zoosphaerium priapus*:-- Jeekel 1999: 14 (new combination)

*Zoosphaerium priapus*:-- Enghoff 2003: 620 (list)

*Zoosphaerium priapus*:-- Wesener & Wägele 2008: 30 (redescription)

*Zoosphaerium priapus*:-- Wesener 2009: 131 (list)

*Zoosphaerium priapus*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis).

Types: 1 F lectotype (designated by Wesener & Wägele 2008: 30).

Localities: Madagascar, Antananarivo (Type); Forêt d'Orangea.

Depository: MNHN CB042.



***Zoosphaerium pseudopriapus*** Wesener, 2009*Zoosphaerium pseudopriapus* Wesener, 2009: 46 (first description)*Zoosphaerium pseudopriapus*:-- Wesener et al. 2010a: 159 (new locality).

Types: M holotype, 3 M, 4 F paratypes.

Localities: Madagascar, Province Antsiranana, Forêt de Bekaraoka (Type); Analamosava River near Daraina; Forêt d'Ampondrabe; Forêt de Binara.

Depository: CAS BLF 9871.

***Zoosphaerium pulchellum*** Wesener, 2009*Zoosphaerium pulchellum* Wesener, 2009: 33 (first description).

Types: M holotype, 1 M, 1 F paratypes.

Localities: Madagascar, Province Toliara, Andohahela parcel 1, 15 km NW Eminiminy.

Depository: FMNH-INS 5388.

***Zoosphaerium xerophilum*** Wesener, 2009*Zoosphaerium xerophilum* Wesener, 2009: 40 (first description)*Zoosphaerium xerophilum*:-- Wesener et al. 2010a: 157 (description of female).

Types: M holotype, 2 M paratypes.

Localities: Madagascar, Province Antsiranana, RS d'Ambre.

Depository: FMNH-INS 3935.

**The *Zoosphaerium platylabum* species-group**

Wesener &amp; Wägele 2008: 50

***Zoosphaerium broelemanni*** Wesener, 2009*Zoosphaerium broelemanni* Wesener, 2009: 70 (first description)*Zoosphaerium broelemanni*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis).---- *Sphaerotherium* (*Globotharium*) *hippocastanum*:-- Brolemann 1922: 230 (description, misidentification), **NOT** *Sphaerotherium hippocastanum* Gervais, 1847.

Types: M holotype, 3 M, 3 F paratypes.

Localities: Madagascar, Province Antananarivo, Antananarivo.

Depository: MNHN CB029, holotype, 2 M, 3 F paratypes; MNHN CB030, 1 M paratype.

***Zoosphaerium corystoides*** Wesener, 2009*Zoosphaerium corystoides* Wesener, 2009: 66 (first description).*Zoosphaerium corystoides*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis).

Types: M holotype, 30 M, 4 F paratypes.

Localities: Madagascar, Province Antsiranana, Montagne d'Ambre.

Depository: FMNH-INS 3932, holotype, 27 M, 3 F paratypes; CAS BLF 2782, 3 M, 1 F paratypes.

***Zoosphaerium platylabum*** (de Saussure & Zehntner, 1897)*Sphaerotherium platylabum* de Saussure & Zehntner, 1897: pl. 5, fig. 9 (first description)*Sphaerotherium platylabum*:-- de Saussure & Zehntner 1902: 54 (description)*Sphaerotherium platylabum*:-- Attems 1910: 86 (new locality)*Sphaerotherium* (*Globotharium*) *platylabum*:-- Brolemann 1922: 230 (list)*Zoosphaerium platylabum*:-- Jeekel 1999: 13 (new combination)*Zoosphaerium platylabum*:-- Enghoff 2003: 620 (list)*Zoosphaerium platylabum*:-- Wesener & Wägele 2008: 50 (redescription)*Zoosphaerium platylabum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)*Zoosphaerium platylabum*:-- Wesener et al. 2010a: 159 (additional specimens).

Types: M holotype.

Localities: Madagascar, Province Antananarivo, Antananarivo (Type); Andasibe, Perinet.

Depository: MNHN CB041.

***Zoosphaerium pseudoplatylabum*** Wesener, 2009*Zoosphaerium pseudoplatylabum* Wesener, 2009: 54 (first description)*Zoosphaerium pseudoplatylabum*:-- Wesener et al. 2010a: 158 (description of female).

Types: M holotype, 3 M paratypes.

Localities: Madagascar, Province Fianarantsoa, Forêt de Vinantelo (type); Andringitra; RS de Ivohibe.

Depository: FMNH-INS 5425, holotype &amp; 1 paratype; FMNH-INS 5421, 2 paratypes.

***Zoosphaerium solitarium*** Wesener, 2009*Zoosphaerium solitarium* Wesener, 2009: 58 (first description).

Types: M holotype, 3 M, 1 F paratypes.

Localities: Madagascar, Province Antsiranana, Montagne des Français.

Depository: ZSM FGZC1897, holotype; Paratypes: ZMUH FGZC1662; ZSM FGZC1842; ZSM FGZC1693 (1 F); CAS BLF 3129.

***Zoosphaerium tsingy*** Wesener, 2009

*Zoosphaerium tsingy* Wesener, 2009:61 (first description).

Types: M holotype, 13 M, 7 F paratypes.

Localities: Madagascar, Province Antsiranana, Tsingy de Bemaraha.

Depository: Holotype, 8 M, 2 F paratypes, FMNH-INS 5455; 5 M, 5 F paratypes, FMNH-INS 5454.

**The *Zoosphaerium coquerelianum* species-group**

synonym *Zoosphaerium alluaudi* species-group

Wesener & Sierwald 2005a: 8.

***Zoosphaerium alluaudi*** (de Saussure & Zehntner, 1902) (Fig. 14G)

*Sphaerotherium alluaudi* de Saussure & Zehntner, 1902: 58 (first description)

*Zoosphaerium alluaudi*:-- Jeekel 1999: 13 (new comb.)

*Zoosphaerium alluaudi*:-- Enghoff 2003: 620 (list)

*Zoosphaerium alluaudi*:-- Wesener & Sierwald 2005a: 8 (redescription)

*Zoosphaerium alluaudi*:-- Wesener & Wägele 2007: 148 (distribution)

*Zoosphaerium alluaudi*:-- Wesener & Wägele 2008: 42 (list)

*Zoosphaerium alluaudi*:-- Wesener 2009: 131 (list)

*Zoosphaerium alluaudi*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)

*Zoosphaerium alluaudi*:-- Wesener et al. 2010b: 1187 (molecular phylogenetic analysis)

*Zoosphaerium alluaudi*:-- Temple et al. 2012: 37: 1185 (conservation).

Types: M lectotype, 2 F paralectotypes (designated Wesener & Sierwald 2005a: 8).

Localities: Madagascar, Fort Dauphin (Type); Petriky and Lavaso Mountains.

Depositories: Lectotype and paralectotypes MNHN CB006.

***Zoosphaerium amabile*** Wesener, 2009

*Zoosphaerium amabile* Wesener, 2009: 74 (first descrip.)

*Zoosphaerium amabile*:-- Wesener et al. 2010a: 158 (additional specimens).

Types: M holotype.

Localities: Madagascar, Province Toamasina, Montagne d'Akirindro.

Depositories: Holotype CAS BLF 8254.

***Zoosphaerium ambrense*** Wesener, 2009

*Zoosphaerium ambrense* Wesener, 2009: 84 (first descrip.)

*Zoosphaerium ambrense*:-- Wesener et al. 2010a: 158 (new locality).

Types: M holotype, 1 M, 2 F paratypes.

Localities: Madagascar, PN Montagne d'Ambre (Type).

Depositories: Type series, MHNG 'Mad 89/29'.

***Zoosphaerium bambusoides*** Wesener & Bespalova, 2010

*Zoosphaerium bambusoides* Wesener et al. 2010a: 140 (first description).

Types: M holotype.

Localities: Madagascar, Province Toamasina, Betampona.

Depositories: CAS BLF 13126-B, CASENT 9032797.

***Zoosphaerium bilobum*** Wesener, 2009

*Zoosphaerium bilobum* Wesener, 2009: 90 (first descrip.)

*Zoosphaerium bilobum*:-- Wesener et al. 2010a: 145 (comparison).

Types: M holotype.

Localities: Madagascar, Province Toliara, Forêt de Vohibasia.

Depositories: FMNH-INS 5457.

***Zoosphaerium coquerelianum*** (de Saussure & Zehntner, 1897)

*Sphaerotherium coquerelianum* de Saussure & Zehntner, 1897: pl. 1, figs 1–2 (first description)

*Sphaerotherium coquerelianum*:-- de Saussure & Zehntner 1902: 42 (description)

*Zoosphaerium coquerelianum*:-- Jeekel 1999: 11 (new combination)

*Zoosphaerium coquerelianum*:-- Enghoff 2003: 620 (list)

*Zoosphaerium coquerelianum*:-- Wesener & Sierwald 2005a: 29 (comparison)

*Zoosphaerium coquerelianum*:-- Wesener & Wägele 2008: 38 (redescription)

*Zoosphaerium coquerelianum*:-- Wesener 2009: 131 (list)

*Zoosphaerium coquerelianum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)

---- *Heligmasoma errans* Chamberlin, 1921: 48, synonymized under *S. coquerelianum* by Wesener & Wägele 2008: 38

---- *Zoosphaerium amittum* Chamberlin, 1921: 59, synonymized under *S. coquerelianum* by Wesener & Wägele 2008: 38.

Types: M lectotype, 3 F paralectotypes (designated by Wesener & Wägele 2008: 38).

Localities: Madagascar.

Depositories: 1 M lectotype, 2 F paralectotypes MNHN CB015; 1 F paralectotype MNHN CB018.

***Zoosphaerium denticulatum* Wesener, 2009**

*Zoosphaerium denticulatum* Wesener, 2009: 108 (first description).

Types: M holotype.

Localities: Madagascar, Province Fianarantsoa, Andrombovata.

Depositories: FMNH-INS 5446.

***Zoosphaerium ignotum* Wesener, 2009**

*Zoosphaerium ignotum* Wesener, 2009: 97 (first description).

Types: M holotype, 2 F paralectotypes.

Localities: Madagascar, east coast, 'waterfalls of 'Uamotna?'

Depositories: SMF

***Zoosphaerium isalo* Wesener, 2009**

*Zoosphaerium isalo* Wesener, 2009: 87 (first description)

*Zoosphaerium isalo*:-- Wesener et al. 2010a: 145 (comparison).

Types: M holotype.

Localities: Madagascar, Province Fianarantsoa, PN d'Isalo.

Depositories: CAS BLF 7301.

***Zoosphaerium muscorum* Wesener & Bepalova, 2010**

*Zoosphaerium muscorum* Wesener et al. 2010a: 136 (first description).

Types: M holotype.

Localities: Madagascar, Province Antsiranana, Anjanaharibe-Sud.

Depositories: FMNH-INS 7898.

***Zoosphaerium smaragdinum* Wesener, 2009**

*Zoosphaerium smaragdinum* Wesener, 2009: 80 (first description)

*Zoosphaerium smaragdinum*:-- Wesener et al. 2010a: 159 (additional specimens).

Types: M holotype, 1 F paratype.

Localities: Madagascar, PN Marojejy.

Depositories: CAS BLF 9079.

***Zoosphaerium tainkintana* Wesener, 2009**

*Zoosphaerium tainkintana* Wesener, 2009: 100 (first description).

Types: M holotype; 2 M, 3 F paratypes.

Localities: Madagascar, Province Antsiranana, Forêt de Binara.

Depositories: Holotype CAS BLF 9555; Paratypes: 3 F CAS BLF 9555; 2 M, 3 F CAS BLF 9658.

***Zoosphaerium tampolo* Wesener, 2009**

*Zoosphaerium tampolo* Wesener, 2009: 94 (first description)

*Zoosphaerium tampolo*:-- Wesener et al. 2010a: 159 (additional specimens).

Types: M holotype; 13 M, 5 F paratypes.

Localities: Madagascar, Province Toamasina, Tampolo.

Depositories: holotype FMNH-INS 3958; Paratypes: 2 M, 3 F FMNH-INS 3958; 8 M, 2 F FMNH-INS 4030; 3 M FMNH-INS 4035.

***Zoosphaerium tigrioculatum* Wesener & Bepalova, 2010**

*Zoosphaerium tigrioculatum* Wesener et al. 2010a: 144 (first description).

Types: M holotype.

Localities: Madagascar, Province Fianarantsoa, PN d'Andringitra.

Depositories: CAS BLF 13757 (CASENT 9032798).

***Zoosphaerium trichordum* Wesener, 2009**

*Zoosphaerium trichordum* Wesener, 2009: 76 (first description).

Types: M holotype, 2 F paratypes.

Localities: Madagascar, Province Antsiranana, Forêt d'Ampondrabe.

Depositories: CAS BLF 9973.



***Zoosphaerium villosum*** Wesener & Sierwald, 2005  
*Zoosphaerium villosum* Wesener & Sierwald, 2005a: 19 (first description)  
*Zoosphaerium villosum*:-- Wesener & Wägele 2008: 42 (new locality)  
*Zoosphaerium villosum*:-- Wesener 2009: 131 (list)  
*Zoosphaerium villosum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)  
*Zoosphaerium villosum*:-- Wesener et al. 2010a: 160 (new locality).

Types: M holotype, 2 M, 1 F paratypes.  
 Localities: Madagascar, SE coast, SF Tampolo (Type); 'Tsianovoha'; Reserve Betampona; Forêt Betaolana.  
 Depositories: Holotype FMNH-INS 3958. Paratypes: 1 M FMNH-INS 8247; 1 F FMNH-INS 8248; 1 M CAS.

***Zoosphaerium viridissimum*** Wesener, 2009  
*Zoosphaerium viridissimum* Wesener, 2009: 104 (first description)  
*Zoosphaerium viridissimum*:-- Wesener et al. 2010a: 160 (additional specimens).

Types: M holotype, 2 M, 1 F paratypes.  
 Localities: Madagascar, PN Marojejy.  
 Depositories: Holotype CAS BLF 9244. Paratypes: 1 F CAS BLF 9244; 1 M CAS BLF 9079; 1 M CAS BLF 9325.

***Zoosphaerium voeltzkowianum*** (de Saussure & Zehntner, 1897)  
*Sphaerotherium voeltzkowianum* de Saussure & Zehntner, 1897: pl. 5, fig. 21 (first description)  
*Sphaerotherium voeltzkowianum*:-- 1901: 435 (descrip.)  
*Sphaerotherium voeltzkowianum*:-- 1902: 52 (descript.)  
*Zoosphaerium voeltzkowianum*:-- Jeekel 1999: 12 (new combination)  
*Zoosphaerium voeltzkowianum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium voeltzkowianum*:-- Wesener & Sierwald 2005a: 29 (comparison)  
*Zoosphaerium voeltzkowianum*:-- Wesener & Wägele 2008: 42 (redescription)  
*Zoosphaerium voeltzkowianum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)  
 ---- *Sphaerotherium imbecillum* de Saussure & Zehntner, 1897: pl. 5, fig. 20 (first description), synonymized under *S. voeltzkowianum* by Wesener & Wägele 2008: 42.  
*Zoosphaerium imbecillum*:-- Jeekel 1999: 12 (new combination)  
*Zoosphaerium imbecillum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium imbecillum*:-- Wesener & Sierwald 2005a: 29 (comparison).  
 ---- *Sphaerotherium globulus* de Saussure & Zehntner,

1902: 34 (first description), synonymized under *S. voeltzkowianum* by Wesener & Wägele 2008: 42. with designation of lectotype.  
*Zoosphaerium globulus*:-- Jeekel 1999: 12 (new combination)  
*Zoosphaerium globulus*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium globulus*:-- Wesener & Sierwald 2005a: 29 (comparison).

Remark: At the time of redescription (Wesener & Wägele 2008), only single male specimens of *Z. imbecillum* and *Z. globulus* were found in the collections at the MNHN, then referred to as holotypes. Because additional type specimens were discovered at the MHNG, the male MNHN type specimens used for the redescription are herewith selected as lectotypes.

Types: M lectotype, 2 F paralectotypes (designated by Wesener & Wägele 2008: 42).  
 Localities: Madagascar, Nosy Bé.  
 Depositories: MNHN CB046.

### The *Zoosphaerium blandum* species-group

Wesener 2009: 110

***Zoosphaerium blandum*** (de Saussure & Zehntner, 1902) (Fig. 14H)  
*Sphaerotherium blandum* de Saussure & Zehntner, 1902: 63  
*Sphaerotherium (Globotharium) blandum*:-- Demange 1969: 485 (additional locality)  
*Zoosphaerium blandum*:-- Jeekel 1999: 12 (new comb.)  
*Zoosphaerium blandum*:-- Enghoff 2003: 6202 (list)  
*Zoosphaerium blandum*:-- Wesener & Wägele 2008: 63 (redescription)  
*Zoosphaerium blandum*:-- Wesener 2009: 132 (list)  
*Zoosphaerium blandum*:-- Wesener & VandenSpiegel 2009: 548 (morphological phylogenetic analysis)  
*Zoosphaerium blandum*:-- Wesener et al. 2010b: 1185 (molecular phylogenetic analysis)  
 ---- *Sphaerotherium stridulator* de Saussure & Zehntner, 1902: 66 (first description), synonymized under *S. blandum* by Wesener & Wägele 2008: 63, with lectotype designation.  
*Zoosphaerium stridulator*:-- Jeekel 1999: 12 (new combination)  
*Zoosphaerium stridulator*:-- Enghoff 2003: 621 (list).

Remarks: At the time of redescription (Wesener & Wägele 2008), only a single male specimen of *Z. blandum* was found in the collections at the MNHN, then referred to as holotype. Because additional type specimens were discovered at the MHNG, the MNHN type specimen used for the redescription is herewith selected as a lectotype.

Types: M lectotype (designated herewith), several paratypes.

Localities: Madagascar, Province Toliara, col de Sakavalana (Type); SE Madagascar spiny forest zone.

Depositories: Lectotype MNHN CB011, paratypes MHNG.

***Zoosphaerium pseudoblandum*** Wesener, 2009  
(Fig. 14G)

*Zoosphaerium pseudoblandum* Wesener, 2009: 110 (first description)

*Zoosphaerium pseudoblandum*:-- Wesener & Vanden Spiegel 2009: 548 (morphological phylogenetic analysis)

*Zoosphaerium pseudoblandum*:-- Wesener et al. 2010b: 1185 (molecular phylogenetic analysis).

Types: M holotype, 3 M, 3 F paratypes.

Localities: Madagascar, Province Toliara, Andohahela, Ebosika.

Depositories: FMNH-INS 'W107'.

**The *Zoosphaerium piligerum* species-group**  
Wesener & Wägele 2008: 57

***Zoosphaerium micropiligerum*** Wesener, 2009

*Zoosphaerium micropiligerum* Wesener, 2009: 115 (first description).

Types: 1 M holotype, 9 M, 2 F paratypes.

Localities: Madagascar, Province Toliara, Andohahela parcel 1, 20 km SE Andranodambo (Type); Andohahela, Col du Sedro.

Depositories: Holotype, 1 M paratype, FMNH-INS 5399; FMNH-INS 5416.

***Zoosphaerium piligerum*** (de Saussure & Zehntner, 1897)

*Sphaerotherium piligerum* de Saussure & Zehntner, 1897: pl. 5, fig. 19 (first description)

*Sphaerotherium piligerum*:-- de Saussure & Zehntner 1902: 36 (description)

*Zoosphaerium piligerum*:-- Jeekel 1999: 11 (new comb.)

*Zoosphaerium piligerum*:-- Enghoff 2003: 620 (list)

*Zoosphaerium piligerum*:-- Wesener & Wägele 2008: 57 (redescription)

*Zoosphaerium piligerum*:-- Wesener 2009: 132 (list).

Remarks: At the time of redescription (Wesener & Wägele 2008), only a single male specimen of *Z. piligerum* was found in the collections at the MNHN, then referred to as holotype. Because additional type specimens were discov-

ered at the MHNG, the MNHN type specimen used for the redescription is herewith selected as a lectotype.

Types: M lectotype (MNHN), several paratypes.

Localities: Madagascar (Type); Province Antananarivo, Andranomay.

Depositories: Lectotype MNHN CB040, paratypes MHNG.

***Zoosphaerium pseudopiligerum*** Wesener, 2009

*Zoosphaerium pseudopiligerum* Wesener, 2009: 118 (first description)

*Zoosphaerium pseudopiligerum*:-- Wesener et al. 2010a: 159 (additional specimens).

Types: M holotype, 5 M, 5 F paratypes.

Localities: Madagascar, Province Toliara, Andohahela parcel 1, 15 km NW Eminiminy (Type); Andohahela parcel 1, 20 km SE Andranondambo.

Depositories: MNHN CB040.

### **Species unassigned to a species-group**

***Zoosphaerium subreflexum*** Jeekel, 1999

*Zoosphaerium subreflexum* Jeekel, 1999: 5 (first descrip.)

*Zoosphaerium subreflexum*:-- Enghoff 2003: 620 (list)

*Zoosphaerium subreflexum*:-- Wesener & Wägele 2008: 63 (list)

*Zoosphaerium subreflexum*:-- Wesener 2009: 132 (list).

Types: M holotype, 2 F paratypes.

Localities: Madagascar, Province Fianarantsoa, Andringitra.

Depositories: ZMA.

***Zoosphaerium analavelona*** Wesener, 2009

*Zoosphaerium analavelona* Wesener, 2009: 122 (first description)

*Zoosphaerium analavelona*:-- Wesener et al. 2010a: 159 (additional specimens).

Remarks: *Z. analavelona* shares numerous telopod characters with *Z. fisheri* Wesener, 2009 and can probably be placed in a species-group with the latter.

Types: M holotype, 29 M, 12 F paratypes.

Localities: Madagascar, Province Toliara, Forêt Analavelona.

Depositories: Holotype, FMNH-INS 5431; Paratypes: FMNH-INS 5431, 23 M, 11 F; FMNH-INS 5449, 3 M; FMNH-INS 5427, 1 M; FMNH-INS 5439, 1 M; CAS BLF 7819, 1 M, 1 F.

***Zoosphaerium fisheri*** Wesener, 2009

*Zoosphaerium fisheri* Wesener, 2009: 126 (first description).

Types: M holotype, 3 M, 4 F paratypes.

Localities: Madagascar, Mandraka.

Depositories: SMF.

***Zoosphaerium darthvaderi*** Wesener & Bepalova, 2010

*Zoosphaerium darthvaderi* Wesener et al., 2010a: 148 (first description).

Types: M holotype, 3 M paratypes.

Localities: Madagascar, Province Antananarivo, RS d'Ambositantely.

Depositories: FMNH-INS 7884, holotype; Paratypes: FMNH-INS 7884; 8185; 8187.

***Zoosphaerium heleios*** Wesener & Bepalova, 2010

*Zoosphaerium heleios* Wesener et al. 2010a: 152 (first description)

Types: M holotype, 1 M, 2 F, 2 immature paratypes.

Localities: Madagascar, Province Toamasina, Torotorofotsy.

Depositories: CAS BLF 10673 (CASENT9032796), holotype; CAS BLF 10673, paratypes.

### Species only known from females or immature males

***Zoosphaerium anale*** (de Saussure & Zehntner, 1897)

*Sphaerotherium anale* de Saussure & Zehntner, 1897: pl. 4, fig. 4 (first description)

*Sphaerotherium anale*:-- de Saussure & Zehntner 1902: 30 (description)

*Zoosphaerium anale*:-- Jeekel 1999: 9 (new combination)

*Zoosphaerium anale*:-- Enghoff 2003: 620 (list)

*Zoosphaerium anale*:-- Wesener & Wägele 2008: 76 (redescription)

*Zoosphaerium anale*:-- Wesener 2009: 132 (list).

Types: F lectotype (designated by Wesener & Wägele 2008: 76).

Localities: Madagascar, SW coast (Type).

Depositories: MNHN CB007.

***Zoosphaerium fraternarium*** Jeekel, 1999

*Zoosphaerium fraternarium* Jeekel, 1999: 12 (replacement name)

*Zoosphaerium fraternarium*:-- Enghoff 2003: 620 (list)

*Zoosphaerium fraternarium*:-- Wesener & Wägele 2008: 71 (redescription)

*Zoosphaerium fraternarium*:-- Wesener 2009: 132 (list)

---- *Sphaerotherium fraternum* de Saussure & Zehntner, 1897: pl.5, fig. 10 (first description, e. p.), *nomen novum* by Jeekel 1999: 12. **NOT** *Sphaerotherium fraternum* Butler, 1872 (see *Cyllosoma fraternum*).

Types: F holotype.

Localities: Madagascar (Type); Province Fianarantsoa, Forêt l'Kongo (Fort Carnot).

Depositories: MNHN CB024.

***Zoosphaerium immane*** (Karsch, 1881)

*Sphaerotherium immane* Karsch, 1881: 30 (first description)

*Sphaerotherium immane*:-- Preudhomme de Borre 1884: 26 (list)

*Sphaerotherium immane*:-- de Saussure & Zehntner 1897: pl. 5, fig. 13 (drawing)

*Sphaerotherium immane*:-- de Saussure & Zehntner 1902: 48 (list)

*Zoosphaerium immane*:-- Jeekel 1999: 11 (new combination)

*Zoosphaerium immane*:-- Enghoff 2003: 620 (list)

*Zoosphaerium immane*:-- Wesener & Wägele 2008: 73 (redescription)

*Zoosphaerium immane*:-- Wesener 2009: 132 (list).

Types: 2 F syntypes.

Localities: Madagascar.

Depositories: ZMB 715.

***Zoosphaerium sakanum*** (Attems, 1910)

*Sphaerotherium sakanum* Attems, 1910: 85 (first description)

*Zoosphaerium sakanum*:-- Jeekel 1999: 12 (new combination)

*Zoosphaerium sakanum*:-- Enghoff 2003: 620 (list)

*Zoosphaerium sakanum*:-- Wesener & Wägele 2008: 68 (redescription)

*Zoosphaerium sakanum*:-- Wesener 2009: 132 (list).

Types: 2 M, 2 F syntypes.

Localities: Madagascar, Province Toamasina, Sakana.

Depositories: ZMB 5038; NHMW 2216.

### **Nomina dubia of *Zoosphaerium***

***Zoosphaerium actaeon*** (White, 1859)

*Zephronia actaeon* White, 1859: 405 (first description)

*Sphaerotherium actaeon*:-- Butler 1873: 176 (comments)



*Zephronia actaeon*:-- Preudhomme de Borre 1884: 23 (list)  
*Sphaerotherium actaeon*:-- de Saussure & Zehntner 1897: pl. 1, figs 1–1b (redescription without viewing of holotype)  
*Sphaerotherium actaeon*:-- de Saussure & Zehntner 1902: 40 (redescription without viewing of holotype)  
*Sphaerotherium actaeon*:-- Brolemann 1922 (list)  
*Sphaerotherium action* [sic!]:-- Overdorff 1993: 740 (lemur predation)  
*Zoosphaerium actaeon*:-- Jeekel 1999: 10 (new combination)  
*Zoosphaerium actaeon*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium actaeon*:-- Wesener & Wägele 2008: 80 (comments).

Remarks: *Zoosphaerium actaeon* was considered a synonym of *Sphaerotherium hippocastanum* Gervais, 1847 by Butler (1873: 176).

Types: Holotype of unknown sex.  
 Localities: Madagascar.  
 Depositories: NHML (presumably lost).

***Zoosphaerium crassum*** (Butler, 1878)  
*Sphaerotherium crassum* Butler, 1878: 301 (first description)  
*Sphaerotherium crassum*:-- Preudhomme de Borre 1884: 26 (list)  
*Sphaerotherium crassum*:-- de Saussure & Zehntner 1902: 68 (list)  
*Zoosphaerium crassum*:-- Jeekel 1999: 14 (new combination)  
*Zoosphaerium crassum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium crassum*:-- Wesener & Wägele 2008: 81 (comments).

Types: Holotype of unknown sex.  
 Localities: Madagascar, Fianarantsoa.  
 Depositories: NHML (presumably lost).

***Zoosphaerium elegans*** (Lenz, 1880)  
*Sphaerotherium elegans* Lenz, 1880: 153 (first description)  
*Sphaerotherium elegans*:-- Preudhomme de Borre 1884: 26 (list)  
*Sphaerotherium elegans*:-- de Saussure & Zehntner 1902: 48 (list)  
*Zoosphaerium elegans*:-- Jeekel 1999: 14 (new combination)  
*Zoosphaerium elegans*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium elegans*:-- Wesener & Wägele 2008: 81 (comments).

Remarks: Lenz stated in a footnote that *Z. elegans* might represent the undescribed male of *Z. hippocastanum* (Gervais, 1847), and that it should be synonymized under that name.

Types: M holotype.  
 Localities: Madagascar, Nosy Bé.  
 Depositories: SMF (presumably lost).

***Zoosphaerium glabrum*** (Butler, 1873)  
*Sphaerotherium glabrum* Butler, 1873: 173 (first description)  
*Sphaerotherium glabrum*:-- Preudhomme de Borre 1884: 26 (list)  
*Sphaerotherium glabrum*:-- de Saussure & Zehntner 1897: pl. 4, fig. 3 (reprint)  
*Sphaerotherium glabrum*:-- de Saussure & Zehntner 1902: 34 (list)  
*Zoosphaerium glabrum*:-- Jeekel 1999: 9 (new comb.)  
*Zoosphaerium glabrum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium glabrum*:-- Wesener & Wägele 2008: 82 (comments).

Types: Two syntypes of unknown sex.  
 Localities: Madagascar.  
 Depositories: NHML (presumably lost).

***Zoosphaerium hippocastanum*** (Gervais, 1847)  
*Sphaerotherium hippocastanum* Gervais, 1847: 83 (first description)  
*Sphaerotherium hippocastanum*:-- Butler 1873: 176 (comment)  
*Sphaerotherium hippocastanum*:-- Lenz 1880: 153 (comment)  
*Sphaerotherium hippocastanum*:-- Preudhomme de Borre 1884: 26 (list)  
*Sphaerotherium hippocastanum*:-- Brancsik 1892: 258 (new record)  
*Zoosphaerium hippocastanum*:-- Jeekel 1999: 10 (new combination)  
*Zoosphaerium hippocastanum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium hippocastanum*:-- Wesener & Wägele 2008: 80 (redescription).

Remarks: The 160-year old holotype of *Z. hippocastanum* is completely fragmented. The specimens determined by de Saussure and Zehntner as *Z. hippocastanum* and used for illustrations do include more than one species, the specimen used for illustrations represents in fact *Zoosphaerium neptunus* (Butler, 1872). The material used for redescription by Brolemann (1922) also differs from the holotype of *Z. hippocastanum*, and currently represents the type series of *Z. broelemanni* Wesener, 2009.

Types: F holotype (completely fragmented).  
Localities: Madagascar, Nosy Bé.  
Depositories: MNHN CB027.

***Zoosphaerium lamprinum*** (Butler, 1878)

*Sphaerotherium lamprinum* Butler, 1878: 300 (first description)  
*Sphaerotherium lamprinum* [sic!]:-- Preudhomme de Borre 1884: 27 (list)  
*Sphaerotherium lamprinum*:-- de Saussure & Zehntner 1897: pl. 5, figs 17–17b (drawing, misidentification?)  
*Sphaerotherium lamprinum*:-- de Saussure & Zehntner 1902: 38 (list, misidentification?)  
*Zoosphaerium lamprinum*:-- Jeekel 1999: 11 (new combination)  
*Zoosphaerium lamprinum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium lamprinum*:-- Wesener & Wägele 2008: 82 (comments).

Remarks: All specimens used for redescription by de Saussure & Zehntner (1902) represent young immatures, unlike the original *Z. lamprinum*. The drawing provided by de Saussure and Zehntner clearly shows a female of *Zoosphaerium neptunus*.

Types: Holotype of unknown sex.  
Localities: Madagascar, Fianarantsoa.  
Depositories: NHML (presumably lost).

***Zoosphaerium latum*** (Butler, 1872)

*Sphaerotherium latum* Butler, 1872: 358 (first description)  
*Sphaerotherium latum*:-- Butler 1873: 176 (list)  
*Sphaerotherium latum*:-- Preudhomme de Borre 1884: 27 (list)  
*Sphaerotherium latum*:-- de Saussure & Zehntner 1897: pl. 5, fig. 14 (drawing)  
*Sphaerotherium latum*:-- de Saussure & Zehntner 1902: 49 (list)  
*Zoosphaerium latum*:-- Jeekel 1999: 11 (new combination)  
*Zoosphaerium latum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium latum*:-- Wesener & Wägele 2008: 82 (comments).

Remarks: The specimens used by de Saussure and Zehntner (1897/1902) most likely do not represent the true *Z. latum*, but *Z. neptunus*.

Types: Holotype of unknown sex.  
Localities: Madagascar, northern part.  
Depositories: NHML (presumably lost).

***Zoosphaerium reflexum*** (Brolemann, 1922)

*Sphaerotherium (Globotherium) reflexum* Brolemann, 1922: 238 (first description)  
*Zoosphaerium reflexum*:-- Jeekel 1999: 13 (new combination)  
*Zoosphaerium reflexum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium reflexum*:-- Wesener & Wägele 2008: 81 (comments).

Types: F holotype.  
Localities: Madagascar, Antananarivo.  
Depositories: Académie malgache (presumably lost).

***Zoosphaerium? reticulatum*** (Butler, 1878)

*Sphaerotherium reticulatum* Butler, 1878: 301 (first description)  
*Sphaerotherium reticulatum*:-- Preudhomme de Borre 1884: 27 (list)  
*Sphaerotherium reticulatum*:-- de Saussure & Zehntner 1902: 68 (list)  
*Zoosphaerium reticulatum*:-- Jeekel 1999: 14 (new combination)  
*Zoosphaerium reticulatum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium reticulatum*:-- Wesener & Wägele 2008: 78 (redescription).

Remarks: All characters, except the antennae, that would allow for a placement of the species into a genus to be made are missing from the types.

Types: 2 syntypes of unknown sex.  
Localities: Madagascar.  
Depositories: NHML BM1877-10.

***Zoosphaerium stigmaticum*** (Butler, 1873)

*Sphaerotherium stigmaticum* Butler, 1873: 178, pl. 19, fig. 3 (first description)  
*Sphaerotherium stigmaticum*:-- Preudhomme de Borre 1884: 28 (list)  
*Sphaerotherium stigmaticum*:-- de Saussure & Zehntner 1897: pl. 5, fig. 18 (reprint of Butler's figure)  
*Sphaerotherium stigmaticum*:-- de Saussure & Zehntner 1902: 67 (list)  
*Zoosphaerium stigmaticum*:-- Jeekel 1999: 14 new comb.)  
*Zoosphaerium stigmaticum*:-- Enghoff 2003: 620 (list)  
*Zoosphaerium stigmaticum*:-- Wesener & Wägele 2008: 81 (comments).

Remarks: No male Sphaerotheriida from Madagascar has a knob on the anal shield as displayed in the drawings by Butler. However, such a knob is common in the Australian genus *Cyliosoma* (Wesener 2014).

Types: 2 syntypes of unknown sex.  
Localities: Madagascar.  
Depositories: NHML (presumably lost).

***Zoosphaerium? testaceum*** (Olivier, 1792)  
*Julus testaceus* Olivier, 1792: 414 (first description)  
*Zephronia testaceus*-- Gervais 1837: 43 (list)  
*Sphaerotherium testaceus*-- Brandt 1841: 364 (list)  
*Zephronia testaceus*-- Gervais 1847: 86 (list)  
*Zephronia testaceus*-- Butler 1873: 179 (list)  
*Zephronia testacea*-- Preudhomme de Borre 1884: 25 (list)  
*Sphaerotherium testaceus*-- de Saussure & Zehntner 1902: 69 (list)  
*Zoosphaerium testaceum*-- Jeekel 1999: 15 (new comb.)  
*Zoosphaerium testaceum*-- Enghoff 2003: 620 (list)  
*Zoosphaerium testaceum*-- Wesener & Wägele 2008: 82 (comments).

Remarks: The first description is not suitable for species identification and the type specimens are presumably lost. The generic determination is only based on the locality given in the first description.

Types: unknown.  
Localities: Madagascar.  
Depositories: unknown.

## **Family Cyliosomatidae Jeekel, 1974**

Wesener 2014a: 199 (raised to family rank)  
Sub tribe *Cyliosomatini* Jeekel, 1974: 45; Jamieson 1987: 64 (sperm morphology).

### **Genera included**

*Cyliosoma* Pocock, 1895  
*Cynotelopus* Jeekel, 1986

**Type genus:** *Cyliosoma*

20 species

### ***Cyliosoma* Pocock, 1895**

*Cyliosoma* Pocock, 1895: 414 (first description); Brölemann 1914: 77 (review of genus); Silvestri 1917: 63 (re-description), 68 (defined as subgenus of *Cyliosoma* in key); Verhoeff 1924: 42 (discussion); Attems 1926: 120 (list); Attems 1928: 203 (list); Verhoeff 1928: 80 (list); Verhoeff 1932: 1379 (list); Jeekel 1971: 24 (list); Jeekel 1974: 45 (classification); Hoffman 1980: 63 (list); Jeekel 1986:

36 (synonymized with *Epicyllosoma*); Jamieson 1987: 64 (sperm morphology); Shelley et al. 2000: 12 (list); Wesener 2014a: 199 (redescription)

### **Synonyms:**

---- *Epicyllosoma* Silvestri, 1917: 68 (first description as subgenus of *Cyliosoma*), synonymized with *Cyliosoma* by Wesener 2014. Jeekel 1971: 24 (list); Jeekel 1974: 45 (classification); Hoffman 1980: 63 (list); Jeekel 1986: 36 (with *Cyliosoma* as synonym); Shelley et al. 2000: 12 (list); Richter et al. 2002: 351 (mandible); Moir & Harvey 2008: 113 (new species); Wesener & Vanden-Spiegel 2009: 566 (classification); Wesener et al. 2010b: 1185 (molecular phylogenetic analysis).

**Type species:** *Zephronia albertisii* Silvestri, 1895, by subsequent designation by Jeekel 1971: 24.

---- *Paracyliosoma* Verhoeff, 1928: 82 (first description as subgenus of *Epicyllosoma*; see above), synonymized under *Epicyllosoma* by Jeekel 1986: 36. Verhoeff 1932: 1383 (list); Jeekel 1971: 27 (list); Jeekel 1974: 45 (raised to genus); Jeekel 1986: 36 (synonymized under *Epicyllosoma*, described as subgenus of *Epicyllosoma*); Hoffman 1980: 63 (list); Shelley et al. 2000: 12 (list).

**Type species:** *Cyliosoma penicilligerum* Verhoeff, 1928, by monotypy.

**Description:** Male anal shield without large groove, only a special field of setae present. Telopoditomere 3 of posterior telopods long and curved.

**Type species:** *Sphaerotherium angulatum* Butler, 1878 (Australia).

**Distribution:** Australia

### **Included species (19)**

*Cyliosoma angulatum* (Butler, 1878) [Qld]  
*Cyliosoma denticulatum* Verhoeff, 1924 [Qld]  
*Cyliosoma excavatum* Verhoeff, 1928 [NSW]  
*Cyliosoma fraternum* (Butler, 1872) [Vic]  
*Cyliosoma froggatti* Silvestri, 1917 [NSW]  
*Cyliosoma kurandanum* Chamberlin, 1920 [Qld]  
*Cyliosoma larvalis* (Butler, 1878) [torres Strait, Qld]  
*Cyliosoma marginepunctatum* (Karsch, 1881) [Qld]  
*Cyliosoma mjoeborgi* Verhoeff, 1924 [Qld]  
*Cyliosoma pachygon* Chamberlin, 1920 [Qld]  
*Cyliosoma penicilligerum* Verhoeff, 1928 [NSW]  
*Cyliosoma penrithense* Brölemann, 1913 [NSW]  
*Cyliosoma queenslandiae* Brölemann, 1913 [Qld]  
*Cyliosoma queenslandicum* Verhoeff, 1924 [NSW, Qld]  
*Cyliosoma sarahae* (Moir & Harvey, 2008) [WA]  
*Cyliosoma sennae* Silvestri, 1898 [Qld]  
*Cyliosoma sjoestedti* Silvestri, 1917 [Qld]  
*Cyliosoma targionii* Silvestri, 1898 [Qld]  
*Cyliosoma unicolor* Silvestri, 1897 [Qld]



***Cyliosoma angulatum*** (Butler, 1878)*Sphaerotherium angulatum* Butler, 1878: 299 (first description)*Sphaerotherium angulatum*:-- Preudhomme de Borre 1884: 26 (list)*Sphaerotherium angulatum*:-- Pocock, 1893: 130 (new locality)*Cyliosoma angulatum*:-- Pocock 1895: 414 (new combination; designated as type species of *Cyliosoma*)*Sphaerotherium angulatum*:-- Brölemann 1913: 80 (list)*Cyliosoma angulatum*:-- Attems 1914: 141 (list)*Sphaerotherium angulatum*:-- Silvestri 1917: 61 (list)*Cyliosoma angulatum*:-- Chamberlin 1920: 88 (list)*Sphaerotherium angulatum*:-- Jeekel 1971: 24 (list)*Cyliosoma angulatum*:-- Jeekel 1981: 24 (list)*Sphaerotherium angulatum*:-- Jeekel 1986: 36 (list)*Cyliosoma angulatum*:-- Wesener 2014a: 205 (redescription, morphological phylogenetic analysis).

Types: F lectotype (designated by Wesener 2014)

Locality: Rockhampton, Qld.

Deposited: NHML BM77–36.

***Cyliosoma denticulatum*** Verhoeff, 1924*Cyliosoma denticulatum* Verhoeff, 1924: 45 (first descrip.)*Cyliosoma denticulatum*:-- Verhoeff 1928: 81 (list)*Cyliosoma denticulatum*:-- Jeekel 1981: 26 (list)*Epicyllosoma (Paracyliosoma) denticulatum* Jeekel 1986: 37 (new combination)*Cyliosoma denticulatum*:-- Wesener 2014a: 199 (list).

Types: 2 M, 1 F syntypes.

Locality: Blackall Range, Qld.

Deposited: NHRM?

***Cyliosoma excavatum*** Verhoeff, 1928*Cyliosoma excavatum* Verhoeff, 1928: 80 (first descrip.)*Cyliosoma excavatum*:-- Moritz & Fischer 1974: 369 (list)*Cyliosoma excavatum*:-- Jeekel 1981: 26 (list)*Epicyllosoma (Epicyllosoma) excavatum*:-- Jeekel 1986: 37 (new combination)*Cyliosoma excavatum*:-- Wesener 2014a: 199 (list).Remark: Jeekel viewed *C. excavatum* as quite similar to *C. froggatti*, both coming from the same type locality (Jeekel 1986: 37).

Types: Syntypes.

Locality: Upper Richmond River [NSW], unknown locality.

Deposited: AM; KS 76511; 1 F, ZMB 5744 (Moritz &amp; Fischer 1974: 369).

***Cyliosoma fraternum*** (Butler, 1872)*Sphaerotherium fraternum* Butler, 1872: 359 (first description)*Sphaerotherium fraternum*:-- Butler 1873: 177 (in species list)*Sphaerotherium fraternum*:-- Preudhomme de Borre 1884: 26 (list)*Sphaerotherium fraternum*:-- Attems 1914: 140 (list)*Sphaerotherium fraternum*:-- Silvestri 1917: 61 (list, ‘=? *Cyliosoma fraternum*’)*Cyliosoma (?) fraternum*:-- Chamberlin 1920: 88 (new combination)*‘Sphaerotherium’ fraternum*:-- Jeekel 1981: 27 (list)*Sphaerotherium fraternum*:-- Jeekel 1986: 39 (list)*Sphaerotherium fraternum*:-- Jeekel 1999: 12. (list)**NOT** *Sphaerotherium fraternum*:-- de Saussure & Zehntner, 1897 (= *Zoosphaerium fraternarium* Jeekel 1999: 12)*Cyliosoma fraternum*:-- Wesener 2014a: 208 (new comb.).

Type: F holotype

Locality: Victoria.

Deposited: NHML BM1860.38 (broken).

***Cyliosoma froggatti*** Silvestri, 1917*Cyliosoma (Cyliosoma) Froggatti* Silvestri, 1917: 68 (first description)*Cyliosoma froggatti*:-- Chamberlin 1920: 87 (list)*Cyliosoma froggatti*:-- Jeekel 1981: 26 (list)*Epicyllosoma (Epicyllosoma) froggatti*:-- Jeekel 1986: 37 (new combination)*Cyliosoma froggatti*:-- Wesener 2014a: 199 (list).Remark: See remarks at *C. excavatum*.

Types: M and F syntypes.

Locality: Richmond River, NSW.

Deposited: Portici?

***Cyliosoma kurandanum*** Chamberlin, 1920*Cyliosoma kurandanum* Chamberlin, 1920: 85 (First description)*Cyliosoma kurandanum*:-- Jeekel 1981: 24 (list)*Epicyllosoma kurandanum*:-- Jeekel 1986: 37 (new combination)*Cyliosoma kurandanum*:-- Wesener 2014a: 199 (list).

Type: F holotype

Locality: Kuranda, Qld.

Deposited: MCZ 4696.

*Cyliosoma larvalis* (Butler, 1878), new combination  
*Zephronia larvalis* Butler, 1878: 301 (first description)  
*Zephronia larvalis*:-- Preudhomme de Borre 1884: 24 (list)  
*Zephronia larvalis*:-- Attems 1914: 146 (list)  
*Zephronia (?) larvalis*:-- Chamberlin 1920: 91 (list)  
*'Zephronia larvalis'*:-- Jeekel 1981: 24 (list)  
*Zephronia larvalis*:-- Jeekel 1986: 39 (list)  
*Zephronia larvalis*:-- Wesener 2014b: 364 (redescription)  
 ---- *Zephronia Albertisii* Silvestri, 1895a: 620 (in species list), 635 (first description), synonymized under *C. larvalis* by Wesener 2014b: 39  
*Cyliosoma (Epicyllosoma) Albertisii*:-- Silvestri 1917: 62 (new combination, redescription)  
*Cyliosoma (Epicyllosoma) albertisi*:-- Chamberlin 1920: 88 (list)  
*Zephronia albertisii*:-- Jeekel 1971: 24 (list, designated type of *Epicyllosoma*.)  
*Cyliosoma albertisii*:-- Jeekel 1981: 24 (list)  
*Epicyllosoma (Epicyllosoma) albertisii*:-- Jeekel 1986: 36 (list, new combination)  
*Cyliosoma albertisii*:-- Wesener 2014a: 199 (list)  
*Cyliosoma albertisii*:-- Wesener 2014b: 364 (synonymized).

Types: F lectotype.  
 Locality: Torres Strait.  
 Deposited: NHML 77–29 (Butler 1878: 299).

*Cyliosoma marginepunctatum* (Karsch, 1881)  
*Sphaerotherium marginepunctatum* Karsch, 1881: 28 (first description)  
*Sphaerotherium marginepunctatum*:-- Preudhomme de Borre 1884: 27 (list)  
*Sphaerotherium marginepunctatum*:-- Attems 1914: 141 (list)  
*Sphaerotherium marginepunctatum*:-- Silvestri 1917: 62 (list '=? *Cyliosoma marginepunctatum*')  
*Sphaerotherium marginepunctatum*:-- Moritz & Fischer 1973: 369 (list)  
*'Sphaerotherium' marginepunctatum*:-- Jeekel 1981: 24 (list)  
*Sphaerotherium marginepunctatum*:-- Jeekel 1986: 39 (list).  
*Cyliosoma marginepunctatum*:-- Wesener 2014a: 208 (new combination).

Type: F holotype.  
 Locality: Rockhampton, Qld.  
 Deposited: ZMB 396.

*Cyliosoma mjobergi* Verhoeff, 1924  
*Cyliosoma queenslandicum mjobergi* Verhoeff, 1924: 45 (as subspecies of '*C. queenslandicum*')  
*Cyliosoma queenslandicum mjobergi*:-- Verhoeff 1928: 80 (list)  
*Cyliosoma queenslandiae mjobergi*:-- Jeekel 1981: 24 (list)  
*Epicyllosoma (Paracyliosoma) mjobergi*:-- Jeekel 1986: 37 (raised to species, new combination)  
*Cyliosoma mjobergi*:-- Wesener 2014a: 199 (list).

Remark: *C. mjobergi* was described as a subspecies of *E. queenslandicum*. According to Jeekel (1986: 37), *C. mjobergi* is close to, or even identical with *C. queenslandiae*.

Types: 1 M, 6 F syntypes.  
 Locality: Colosseum, Qld (Verhoeff 1924: 47).  
 Deposited: NHRM?

*Cyliosoma pachygon* Chamberlin, 1920  
*Cyliosoma pachygon* Chamberlin 1920: 86 (first descrip.)  
*Cyliosoma pachygon*:-- Jeekel 1981: 24 (list)  
*Epicyllosoma pachygon*:-- Jeekel 1986: 37 (new comb.)  
*Cyliosoma pachygon*:-- Wesener 2014a: 199 (list).

Type: M holotype.  
 Locality: Cooktown, Qld.  
 Deposited: MCZ 4697.

*Cyliosoma penicilligerum* Verhoeff, 1928  
*Cyliosoma (Paracyliosoma) penicilligerum* Verhoeff, 1928: 80 (first description)  
*Cyliosoma penicilligerum*:-- Jeekel 1971: 27 (list)  
*Cyliosoma penicilligerum*:-- Jeekel 1981: 26 (list)  
*Epicyllosoma (Paracyliosoma) penicilligerum*:-- Jeekel 1986: 36 (new combination)  
*Cyliosoma penicilligerum*:-- Wesener 2014a: 199 (list).

Types: 4 M, 1 F syntypes.  
 Locality: North Dorrigo [NSW]  
 Deposited: AM KS76522.

*Cyliosoma penrithense* Brölemann, 1913  
*Cyliosoma penrithensis* Brölemann, 1913: 85 (first description)  
*Cyliosoma penrithensis*:-- Attems 1914: 64, 142 (list)  
*Cyliosoma penrithensis*:-- Silvestri 1917: 62 (synonymized with *C. sennae*)  
*Cyliosoma penrithensis*:-- Chamberlin 1920: 88 (list as synonym of *Cyliosoma sennae*)  
*Cyliosoma penrithense*:-- Verhoeff 1928: 8 (list)  
*Cyliosoma penrithense*:-- Jeekel 1981: 26 (list)  
*Epicyllosoma (Epicyllosoma) penrithense*:-- Jeekel 1986: 37 (new combination)

*Cyliosoma penrithense*:-- Wesener 2014a: 199 (list).

Remark: Silvestri (1917) synonymized *E. penrithense* with *E. sennae*, something not followed by Jeekel (1986: 36), based on the widely separate type localities and differences in the first descriptions.

Types: 1 M, 3 F syntypes.  
Locality: Penrith & Camberra  
Deposited: AM.

*Cyliosoma queenslandiae* Brölemann, 1913

*Cyliosoma queenslandiae* Brölemann, 1913: 80 (first description)

*Cyliosoma Queenslandiae*:-- Attems 1914: 142 (list)

*Cyliosoma Queenslandiae*:-- Silvestri 1917: 62 (synonymized with *Cyliosoma unicolor*)

*Cyliosoma queenslandiae*:-- Chamberlin 1920: 87 (list as synonym)

*Cyliosoma queenslandiae*:-- Verhoeff 1924: 45 (re-described as '*Cyliosoma queenslandicum* Bröl. (= *queenslandiae* Bröl.)')

*Cyliosoma queenslandiae*:-- Jeekel 1981: 24 (list)

*Epicyllosoma (Paracyliosoma) queenslandiae*:-- Jeekel 1986: 37 (new combination)

*Cyliosoma queenslandiae*:-- Wesener 2014a: 199 (list).

Remarks: Silvestri (1917) synonymized *E. queenslandiae* with *E. unicolor*. Both were described from the same type locality and they are morphologically similar. Jeekel treated both as separate species based on the very long prefemoral process of the anterior telopods in *C. unicolor* (Jeekel 1986: 37). A restudy of the type material of both species would be necessary to clarify this question.

Types: 4 M, 3 F syntypes.  
Locality: Gayndah, Qld.  
Deposited: AM.

*Cyliosoma queenslandicum* Verhoeff, 1924)

*Cyliosoma queenslandicum* Verhoeff, 1924: 45 (first description as '*Cyliosoma queenslandicum* Bröl. (= *queenslandiae* Bröl.), from new material)

*Cyliosoma queenslandicum*:-- Verhoeff 1928: 80 (redescr.)

*Epicyllosoma (Paracyliosoma) queenslandicum*:-- Jeekel 1986: 37 (new combination, treated as species separate from *C. queenslandiae* Bröl.)

*Cyliosoma queenslandicum*:-- Wesener 2014a: 199 (list).

Remarks: Verhoeff viewed *E. queenslandicum* as identical with *E. targionii*. Jeekel wrote (1986: 37): "It seems likely, however, that Verhoeff mixed up two species under the name: one from northern Queensland and one from

southern Queensland, subsequently reported also from northern New South Wales. A restudy of the type material, involving also the selection of a lectotype, is needed to clarify this point."

Types: Several M and F syntypes.  
Localities: Herberton, Mt Tamborine and Malanda, Qld.  
Deposited: NHRM?

*Cyliosoma sarahae* (Moir & Harvey, 2008)

(Figs 15A, B)

*Epicyllosoma (Epicyllosoma) sarahae* Moir & Harvey, 2008: 114 (first description)

*Epicyllosoma sarahae*:-- Moir et al. 2009: 1962 (Ecology, distribution)

*Cyliosoma sarahae*:-- Wesener 2014a: 199 (list).

Types: M holotype, 5 M, 8 F paratypes.  
Locality: Cape Le Grand National Park, inland from Thistle Beach, WA, 34°00'20"S, 122°11'39"E, in soil.  
Deposited: WAM T78757, T78948.

*Cyliosoma sennae* Silvestri, 1898

*Cyliosoma Sennae* Silvestri, 1898: 227 (first description)

*Cyliosoma sennae*:-- Brölemann 1913: 80 (list)

*Cyliosoma Sennae*:-- Attems 1914: 142 (list)

*Cyliosoma (Cyliosoma) Sennae*:-- Silvestri 1917: 62 (re-description)

*Cyliosoma sennae*:-- Chamberlin 1920: 88 (list)

*Cyliosoma sennae*:-- Jeekel 1981: 24 (list)

*Epicyllosoma (Epicyllosoma) sennae*:-- Jeekel 1986: 37 (new combination)

*Cyliosoma sennae*:-- Wesener 2014a: 199 (list).

Remark: Silvestri (1917) viewed *E. penrithense* as synonymous with *E. sennae*. Jeekel (1986: 37) did not follow this synonymization, treating both as separate entities based on the differences in the first descriptions and the widely separated type localities.

Types: M and F syntypes.

Locality: Cairns, Qld.

Deposited: MZUF.

*Cyliosoma sjoestedti* Silvestri, 1917

*Cyliosoma (Epicyllosoma) Sjöstedti* Silvestri, 1917: 68 (first description)

*Cyliosoma sjoestedti*:-- Chamberlin 1920: 88 (list)

*Cyliosoma sjoestedti*:-- Jeekel 1981: 24 (list)

*Epicyllosoma sjoestedti*:-- Jeekel 1986: 37 (new comb.)

*Cyliosoma sjoestedti*:-- Wesener 2014a: 199 (list).



Types: F holotype or syntypes.  
 Locality: Cardwell, Qld.  
 Deposited: NHRM.

***Cyliosoma targionii*** Silvestri, 1898)

*Cyliosoma Targionii* Silvestri, 1898: 226 (first description)  
*Cyliosoma targionii*:-- Brölemann 1913: 80 (list)  
*Cyliosoma Targionii*:-- Attems 1914: 142 (list)  
*Cyliosoma (Cyliosoma) Targionii*:-- Silvestri 1917: 62 (re-description)  
*Cyliosoma targionii*:-- Chamberlin 1920: 87 (list)  
*Cyliosoma targionii*:-- Jeekel 1981: 24. (list)  
*Epicyliosoma (Paracyliosoma) targionii*:-- Jeekel 1986: 37 (new combination)  
*Cyliosoma targionii*:-- Wesener 2014a: 199 (list).

Remarks: See *E. queenslandicum* for a history of the confusion of the two species.

Types: M and F syntypes.  
 Locality: Cairns, Qld.  
 Deposited: MZUF.

***Cyliosoma unicolor*** Silvestri, 1897

*Cyliosoma unicolor* Silvestri, 1897a: 16 (first description)  
*Cyliosoma unicolor*:-- Brölemann 1913: 80 (list).  
*Cyliosoma unicolor*:-- Attems 1914: 142. (list)  
*Cyliosoma (Cyliosoma) unicolor*:-- Silvestri 1917: 62 (re-description)  
*Cyliosoma unicolor*:-- Chamberlin 1920: 87 (list)  
*Cyliosoma unicolor*:-- Jeekel 1981: 24. (list)  
*Epicyliosoma (Paracyliosoma) unicolor*:-- Jeekel 1986: 37 (new combination)  
*Cyliosoma unicolor*:-- Wesener 2014a: 199 (list).

Remarks: See remarks under *C. queenslandiae* above.

Types: M and F syntypes.  
 Locality: Gayndah, Qld.  
 Deposited: MTD 283.

***Cynotelopus* Jeekel, 1986**

*Cynotelopus* Jeekel, 1986: 39 (first description); Shelley et al. 2000: 12 (list, under family Sphaeropoeidae); Wesener & VandenSpiegel 2009: 566 (morphological phylogenetic analysis); Wesener 2014a: 209 (morphological phylogenetic analysis).

**Description:** Male anal shield heavily modified, with a gigantic groove. Telopoditomere 3 of posterior telopods wide and short.

**Type species:** *Cynotelopus notabilis* Jeekel, 1986, by original designation.  
 Distribution: Australia, WA.

Included species:

***Cynotelopus notabilis*** Jeekel, 1986 [WA]

**Monotypic**

***Cynotelopus notabilis*** Jeekel, 1986

(Fig. 15B)

*Cynotelopus notabilis* Jeekel, 1986: 40 (first description)

*Cynotelopus notabilis*:-- Main et al. 2002: 383 (new locality)

*Cynotelopus notabilis*:-- Moir et al. 2009: 1962 (ecology).

Types: M holotype, 2 F paratypes.

Locality: Nornalup, WA.

Deposited: Holotype SAM OM1215; paratypes SAM.

**Nomina dubia of Sphaerotheriida**

***Sphaerotherium convexum*** C.L. Koch, 1847

*Sphaerotherium convexum* C.L. Koch, 1847: 100 (first description)

*Sphaerotherium convexum*:-- C.L. Koch 1863: 31 (re-description)

*Sphaerotherium convexum*:-- Butler 1873: 176 (list)

*Sphaerotherium convexum*:-- Karsch 1881: 28 (list)

*Sphaerotherium convexum*:-- Preudhomme de Borre 1884: 26 (list)

*Sphaerotherium convexum*:-- Attems 1914: 140 (list)

*Sphaerotherium convexum*:-- Silvestri 1917: 61 (list)

*Cyliosoma (?) convexum*:-- Chamberlin 1920: 88 (list)

*Sphaerotherium convexum*:-- Jeekel 1981: 24 (list)

*Sphaerotherium convexum*:-- Jeekel 1986: 39 (list).

Types: Unknown.

Locality: 'Neu Holland.'

Deposited: Unknown.

***Zephronia glaberrima*** Attems, 1898

*Zephronia glaberrima* Attems 1898: 510 (first description)

*Zephronia glaberrima*:-- Attems 1914: 145 (list)

*'Zephronia glaberrima*:-- Jeekel 1981: 24 (list)

*Zephronia glaberrima*:-- Jeekel 1986: 39 (list).

Types: F holotype

Locality: Cooktown, Qld.

Deposited: Unknown.

***Sphaerotherium gronovii*** Brandt 1841*Sphaerotherium gronovii* Brandt 1841a: 180*Sphaerotherium gronovii*:-- Butler 1873: 178 (list)*Sphaerotherium ? gronovii*:-- Preudhomme de Borre 1884: 26 (list).

Types: Unknown.

Locality: 'North Sea between Norway and Great Britain', unknown

Deposited: Should have been in ZISP, but presumably lost.

***Sphaerotherium kutorgae*** Brandt, 1841*Sphaerotherium kutorgae* Brandt, 1841a: 176 (first description)*Sphaerotherium kutorgae*:-- Butler 1873: 175 (list)*Sphaerotherium kutorgae*:-- Preudhomme de Borre 1884: 27 (list).

Types: Holotype of unknown sex.

Locality: Unknown

Deposited: Should have been in ZISP, but presumably lost.

***Sphaerotherium titanus*** Brandt, 1841*Sphaerotherium titanus* Brandt, 1841a: 176 (first description)*Sphaerotherium titanus*:-- Butler 1873: 177 (list)*Sphaerotherium titanus*:-- Preudhomme de Borre 1884: 28 (list).

Types: Unknown.

Locality: Unknown.

Deposited: Should have been in ZISP, but presumably lost.

**Nomina nuda of Sphaerotheriida**

Remarks: The here listed genus names are of no status in nomenclature, as they were not proposed in concordance with the then valid code.

***Ceylonbelum*** Verhoeff, 1937*Ceylonbelum*:-- Verhoeff 1937: 81 (mention)*Ceylonbelum*:-- Jeekel 1971: 24 (explanation)

Remark: No type species was designated and the proposed manuscript in which this genus was supposed to be described was never finished or published.

***Dekanobelum*** Verhoeff, 1937*Dekanobelum*:-- Verhoeff 1937: 81 (mention)*Dekanobelum*:-- Jeekel 1971: 24 (explanation)

Remark: No type species was designated and the proposed manuscript in which this genus was supposed to be described was never published.

***Plethoconium*** Attems, 1943*Plethoconium* Attems, 1943: 60 (description as subgenus)*Plethoconium* [sic!]:-- Attems 1953: 154 (list)*Plethoconium*:-- Jeekel 1971: 27 (explanation)

Remark: Proposed without any species assigned to the name and therefore not available

***Rhopalopaeus*** Verhoeff, 1942*Rhopalopaeus*:-- Takakuwa 1942: 362 (mention)*Rhopalopaeus*:-- Jeekel 1971: 28 (explanation)

Remark: Takakuwa lists the genus name with reference to Verhoeff. However, Verhoeff never published a paper with such a generic name, therefore the name is not available

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<i>gestri</i> , <i>Zephronia</i>	32	<i>leium</i> , <i>Castanootherium</i>	47
<i>giganteum</i> , <i>Sphaerotherium</i>	56	<i>leopardina</i> , <i>Arthrosphaera</i>	69

<i>leve</i> , <i>Prionobelum</i>	37	<i>piligerum</i> , <i>Zoosphaerium</i>	84
<i>leve</i> , <i>Kylindotherium</i>	63	<i>pilosum</i> , <i>Castanotherium</i>	48
<i>libidinosum</i> , <i>Zoosphaerium</i>	79	<i>pinnatum</i> , <i>Sphaerotherium</i>	59
<i>lichtensteini</i> , <i>Sphaerotherium</i>	57	<i>plagiarium</i> , <i>Sphaerotherium</i>	59
<i>lignivora</i> , <i>Zephronia</i>	33	<i>plasoni</i> , <i>Castanotherium</i>	48
<i>lugubris</i> , <i>Sphaeropoeus</i>	40	<i>platylabum</i> , <i>Zoosphaerium</i>	80
<i>lutescens</i> , <i>Arthrosphaera</i>	69	<i>politissima</i> , <i>Kophosphaera</i>	29
<i>maculata</i> , <i>Zephronia</i>	33	<i>politum</i> , <i>Zephronia</i> (syn.)	34
<i>maculatus</i> , <i>Sphaeropoeus</i>	40	<i>politus</i> , <i>Sphaeropoeus</i>	40
<i>maculosum</i> , <i>Prionobelum</i>	38	<i>porosus</i> , <i>Castanotheroides</i>	50
<i>madura</i> , <i>Arthrosphaera</i>	70	<i>priapus</i> , <i>Zoosphaerium</i>	79
<i>magna</i> , <i>Arthrosphaera</i>	70	<i>profuga</i> , <i>Zephronia</i>	34
<i>magnus</i> , <i>Sphaeropoeus</i>	40	<i>pseudoblandum</i> , <i>Zoosphaerium</i>	84
<i>mahaum</i> , <i>Sphaerotherium</i>	57	<i>pseudopiligerum</i> , <i>Zoosphaerium</i>	84
<i>majorinum</i> , <i>Prionobelum</i>	38	<i>pseudoplatylabum</i> , <i>Zoosphaerium</i>	80
<i>malaccanus</i> , <i>Sphaeropoeus</i>	40	<i>pseudopriapus</i> , <i>Zoosphaerium</i>	80
<i>mammifera</i> , <i>Kophosphaera</i>	29	<i>pubescens</i> , <i>Sphaerotherium</i> (syn.)	60
<i>manca</i> , <i>Zephronia</i>	33	<i>pulchellum</i> , <i>Zoosphaerium</i>	80
<i>marginella</i> , <i>Arthrosphaera</i>	70	<i>punctatum</i> , <i>Sphaerotherium</i>	59
<i>marginepunctatum</i> , <i>Cyliosoma</i>	90	<i>punctipes</i> , <i>Oligaspis</i> (syn.)	60
<i>marmorata</i> , <i>Arthrosphaera</i>	70	<i>punctatissimus</i> , <i>Sphaeropoeus</i>	40
<i>martensi</i> , <i>Kophosphaera</i>	29	<i>punctulatum</i> , <i>Sphaerotherium</i>	59
<i>micropiligerum</i> , <i>Zoosphaerium</i>	84	<i>puverea</i> , <i>Zephronia</i> (syn.)	55
<i>microstictum</i> , <i>Sphaerotherium</i> (syn.)	55	<i>pygidiale</i> , <i>Zoosphaerium</i> (syn.)	78
<i>millepunctatum</i> , <i>Sphaerotherium</i>	58	<i>pygostolis</i> , <i>Arthrosphaera</i>	71
<i>mitoho</i> , <i>Zoosphaerium</i>	79	<i>pyrrhomelanum</i> , <i>Castanotherium</i>	48
<i>mjoebergi</i> , <i>Cyliosoma</i>	90	<i>queenslandiae</i> , <i>Cyliosoma</i>	91
<i>moderatum</i> , <i>Castanotherium</i>	47	<i>queenslandicum</i> , <i>Cyliosoma</i>	91
<i>modestum</i> , <i>Sphaerotherium</i>	58	<i>reflexum</i> , <i>Zoosphaerium</i>	87
<i>modiglianii</i> , <i>Sphaeropoeus</i>	40	<i>repulsum</i> , <i>Sphaerotherium</i> (syn.)	54
<i>montana</i> , <i>Zephronia</i>	34	<i>reticulatum</i> , <i>Zoosphaerium</i>	87
<i>montana</i> , <i>Rajasphaera</i>	50	<i>retusum</i> , <i>Sphaerotherium</i> (syn.)	55
<i>monticola</i> , <i>Sphaerotherium</i> (syn.)	53	<i>ridleyi</i> , <i>Zephronia</i>	35
<i>multidentata</i> , <i>Prionobelum</i>	38	<i>rotundatum</i> , <i>Sphaerotherium</i>	60
<i>muscorum</i> , <i>Zoosphaerium</i>	82	<i>rudebecki</i> , <i>Sphaerotherium</i>	60
<i>musicus</i> , <i>Sphaeromimus</i>	75	<i>rufipes</i> , <i>Castanotherium</i>	48
<i>narcissei</i> , <i>Sphaerotherium</i>	58	<i>ruginosa</i> , <i>Arthrosphaera</i>	71
<i>nebulosum</i> , <i>Sphaerotherium</i>	51	<i>rugosa</i> , <i>Arthrosphaera</i>	72
<i>nepalensis</i> , <i>Zephronia</i>	34	<i>rugosum</i> , <i>Bothrobelum</i>	27
<i>neptunus</i> , <i>Zoosphaerium</i>	77	<i>rugulosum</i> , <i>Sphaerotherium</i>	60
<i>nigriceps</i> , <i>Castanotherium</i>	47	<i>saintelucei</i> , <i>Sphaeromimus</i>	75
<i>nigrinota</i> , <i>Zephronia</i>	34	<i>sakanum</i> , <i>Zoosphaerium</i>	85
<i>nigritarse</i> , <i>Sphaerotherium</i>	58	<i>sarahae</i> , <i>Cyliosoma</i>	91
<i>nigromaculatum</i> , <i>Castanotherium</i>	47	<i>scholastica</i> , <i>Arthrosphaera</i>	72
<i>nigrum</i> , <i>Sphaerotherium</i>	63	<i>selindum</i> , <i>Sphaerotherium</i>	61
<i>nitida</i> , <i>Arthrosphaera</i>	71	<i>semilaevis</i> , <i>Zephronia</i>	35
<i>notabilis</i> , <i>Cynotelopus</i>	92	<i>sennae</i> , <i>Cyliosoma</i>	91
<i>noticeps</i> , <i>Arthrosphaera</i>	71	<i>separatum</i> , <i>Sphaerobelum</i>	36
<i>novae-zealandudae</i> , <i>Procyliosoma</i>	25	<i>severa</i> , <i>Arthrosphaera</i>	72
<i>obscurum</i> , <i>Castanotherium</i>	47	<i>shivapuri</i> , <i>Kophosphaera</i>	29
<i>obtusum</i> , <i>Sphaerotherium</i>	58	<i>siamensis</i> , <i>Zephronia</i>	35
<i>ornatum</i> , <i>Castanotherium</i>	47	<i>silvestrii</i> , <i>Arthrosphaera</i>	72
<i>ovalis</i> , <i>Cryxus</i>	28	<i>similare</i> , <i>Sphaerotherium</i>	61
<i>ovalis</i> , <i>Zephronia</i>	34	<i>simplex</i> , <i>Castanotherium</i>	48
<i>pachygon</i> , <i>Cyliosoma</i>	90	<i>sinuatus</i> , <i>Castanotheroides</i>	50
<i>pellita</i> , <i>Zephronia</i>	34	<i>sjoestedti</i> , <i>Cyliosoma</i>	91
<i>pellitum</i> , <i>Castanotherium</i>	47	<i>smaragdinum</i> , <i>Zoosphaerium</i>	82
<i>pellitus</i> , <i>Sphaeropoeus</i>	40	<i>solitarium</i> , <i>Sphaerotherium</i>	61
<i>pelloceps</i> , <i>Arthrosphaera</i>	71	<i>solitarium</i> , <i>Zoosphaerium</i>	80
<i>penicilligerum</i> , <i>Cyliosoma</i>	90	<i>sparsopunctatum</i> , <i>Castanotherium</i>	48
<i>penrithense</i> , <i>Cyliosoma</i>	90	<i>speciosus</i> , <i>Sphaeropoeus</i>	41
<i>perbrincki</i> , <i>Sphaerotherium</i>	58	<i>specularis</i> , <i>Zephronia</i>	35
<i>permodestum</i> , <i>Sphaerotherium</i>	59	<i>spinatum</i> , <i>Sphaerotherium</i>	61
<i>philippinus</i> , <i>Castanotheroides</i>	49	<i>splendidus</i> , <i>Sphaeromimus</i>	75
<i>pilifera</i> , <i>Arthrosphaera</i>	71	<i>stellatum</i> , <i>Castanotherium</i>	48

<i>steppense</i> , <i>Sphaerotherium</i>	61	<i>trichordum</i> , <i>Zoosphaerium</i>	82
<i>stigmaticum</i> , <i>Zoosphaerium</i>	87	<i>tricolis</i> , <i>Castanotherium</i>	49
<i>stolli</i> , <i>Sphaeropoeus</i>	41	<i>truncatum</i> , <i>Sphaerobelum</i>	63
<i>stridula</i> , <i>Arthrosphaera</i>	72	<i>tsingy</i> , <i>Zoosphaerium</i>	81
<i>stridulator</i> , <i>Zoosphaerium</i> (syn.)	83	<i>tuberculatum tuberculatum</i> , <i>Procyliosoma</i>	26
<i>striolatum delacyi</i> , <i>Procyliosoma</i>	25	<i>tuberculosis</i> , <i>Sphaeropoeus</i>	41
<i>subdorsale</i> , <i>Sphaerotherium</i>	61	<i>tuberosum</i> , <i>Sphaerotherium</i>	62
<i>submite</i> , <i>Sphaerotherium</i>	62	<i>tumida</i> , <i>Zephronia</i>	35
<i>subreflexum</i> , <i>Zoosphaerium</i>	84	<i>tzitzikamum</i> , <i>Sphaerotherium</i>	62
<i>sulcatulum</i> , <i>Bothrobelum</i>	27	<i>unciger</i> , <i>Sphaeropoeus</i>	41
<i>sulcicollis</i> , <i>Castanotherium</i>	48	<i>unicolor</i> , <i>Cyliosoma</i>	92
<i>sumatrensis</i> , <i>Sphaeropoeus</i>	41	<i>variegatum</i> , <i>Castanotherium</i>	49
<i>suspectum</i> , <i>Castanotherium</i>	49	<i>variegatus</i> , <i>Sphaeropoeus</i>	41
<i>tainkintana</i> , <i>Zoosphaerium</i>	82	<i>vavovavy</i> , <i>Sphaeromimus</i>	75
<i>tampolo</i> , <i>Zoosphaerium</i>	82	<i>velutinus</i> , <i>Sphaeropoeus</i>	41
<i>targionii</i> , <i>Cyliosoma</i>	92	<i>versicolor</i> , <i>Arthrosphaera</i>	73
<i>tasmanicum</i> , <i>Procyliosoma</i>	26	<i>villosum</i> , <i>Zoosphaerium</i>	83
<i>tatusiaeformis</i> , <i>Sphaeropoeus</i>	41	<i>viride</i> , <i>Sphaerotherium</i> (syn.)	60
<i>tenuitarse</i> , <i>Sphaerotherium</i>	62	<i>viridescens</i> , <i>Zephronia</i>	35
<i>testaceum</i> , <i>Zoosphaerium</i>	88	<i>viridissimum</i> , <i>Zoosphaerium</i>	83
<i>thurstoni</i> , <i>Arthrosphaera</i>	72	<i>voeltzkowianum</i> , <i>Zoosphaerium</i>	83
<i>tigratus</i> , <i>Sphaeropoeus</i>	41	<i>volzi</i> , <i>Castanotherium</i>	49
<i>tigrina</i> , <i>Zephronia</i>	35	<i>walesianum</i> , <i>Procyliosoma</i>	26
<i>tigrinoides</i> , <i>Zephronia</i>	35	<i>weberi</i> , <i>Sphaerotherium</i>	62
<i>tigrioculatum</i> , <i>Zoosphaerium</i>	82	<i>westlandicum tuberculatum</i> , <i>Procyliosoma</i>	26
<i>titanus</i> , <i>Sphaeromimus</i>	75	<i>whiteheadi</i> , <i>Castanotherium</i>	49
<i>titanus</i> , <i>Sphaerotherium</i>	93	<i>whroughtoni</i> , <i>Arthrosphaera</i>	73
<i>tivium</i> , <i>Castanotherium</i>	49	<i>xerophilum</i> , <i>Zoosphaerium</i>	80
<i>tomentosum</i> , <i>Sphaerotherium</i>	62	<i>zebraica</i> , <i>Arthrosphaera</i>	73
<i>transitiva</i> , <i>Arthrosphaera</i>	73	<i>zonata</i> , <i>Tigridosphaera</i>	42
<i>transzambeziacum</i> , <i>Sphaerotherium</i>	62	<i>zuluense</i> , <i>Sphaerotherium</i>	63
<i>trichopygum</i> , <i>Sphaerotherium</i> (syn.)	54		

## REFERENCES

- Achar KP (1986) Analysis of male meiosis in seven species of Indian pill-millipedes (Diplopoda: Myriapoda) *Caryologia* 39 (1): 89–101
- Alderweireldt M (1997) Two new species of the genus *Sphaerotherium* Brandt, 1833 from Zimbabwe, together with some Biogeographical notes (Diplopoda, Oniscomorpha, Sphaerotheriidae) *Myriapodologica* 4 (7): 51–57
- Alagesan P & Ramanathan B (2013) Diversity of Millipedes in Alagar Hills Reserve Forest in Tamil Nadu, India. *International Journal of Biodiversity* 2013: 1–5. <http://dx.doi.org/10.1155/2013/715460>
- Ambarish CN & Sridhar KR (2013a) Observations of pill-millipedes of the Western Ghats (India) *Journal of Agricultural Technology* 9 (1): 61–79
- Ambarish CN & Sridhar KR (2013b) Production and Quality of Pill-Millipede manure: A Microcosm Study. *Agricultural Research* 2 (3): 258–264. doi: 10.1007/s40003-013-0075-5
- Ambarish CN, Kadamannaya BS & Sridhar KR (2013) Chromosome studies on two endemic pill-millipedes of the genus *Arthrosphaera* (Diplopoda: Sphaerotheriida) from the Western Ghats of India. *The Nucleus* 56 (3): 205–210. doi: 10.1007/s13237-013-0096-2
- Ambarish CN & Sridhar KR (2014a) Do the giant pill-millipedes (*Arthrosphaera*: Sphaerotheriida) disseminate arbuscular mycorrhizal spores in the Western Ghats? *Symbiosis* 64 (2): 95–99. doi: 10.1007/s13199-014-0306-y
- Ambarish CN & Sridhar KR (2014b) Cytological and karyological observations on two endemic giant pill-millipedes *Arthrosphaera* (Pocock 1895) (Diplopoda: Sphaerotheriida) of the Western Ghats of India, *Caryologia: International Journal of Cytology, Cytosystematics and Cytogenetics* 67: 49–56. doi: 10.1080/00087114.2014.891700
- Ambarish CN & Sridha, KR (2014c) Moulting behaviour of the giant pill-millipedes (*Sphaerotheriida*, *Arthrosphaera*) of the Western Ghats of India: an *ex-situ* study. *The Journal of Tropical Asian Entomology* 03 (1): 12–22
- Ambarish CN & Sridhar KR (2015a) Microbial dynamics in food, intestine and fecal pellets of two endemic pill-millipedes (*Arthrosphaera*: Sphaerotheriida) of the Western Ghats. *Journal of Agricultural Technology* 11 (3): 637–648
- Ambarish CN & Sridhar KR (2015b) Pill-millipedes (*Arthrosphaera*: Sphaerotheriida) of the Western Ghats: a future source of antioxidants? *International Journal of Tropical Insect Science* 35 (3): 117–124. doi:10.1017/S1742758415000132
- Ambarish CN & Sridhar KR (2015c) Pattern of Distribution of Endemic Pill-Millipedes in the Southwestern India. *Proceedings of the Zoological Society Kolkata XX*: pp–pp. doi: 10.1007/s12595-015-0153-8
- Ambarish CN & Sridhar KR (2016) Stridulation and Courtship Behaviour of Four Endemic Pill-Millipedes, *Arthrosphaera* spp. (Sphaerotheriida: Arthrosphaeridae) of the Western Ghats of India. *Proceedings of the Zoological Society of Kolkata, India* 69 (1): 104–113. doi: 10.1007/s12595-014-0133-4
- Armstrong AJ & Hamer ML (2015) English names of the millipedes (Diplopoda) of KwaZulu-Natal. *African Invertebrates* 56 (1): 147–159
- Ashwini KM & Sridhar KR (2002) Towards organic farming with millipede *Arthrosphaera magna*. *Current Science* 82 (1): 20–22



- Ashwini KM & Sridha, KR (2005) Leaf-litter preference and conversion by a saprophagous tropical pill millipede, *Arthrosphaera magna* Attems. *Pedobiologia* 49: 307–316
- Ashwini KM & Sridhar KR (2006a) Breakdown of plantation residues by pill millipedes (*Arthrosphaera magna*) and assessment of compost quality. *Current Science* 90 (7): 954–959
- Ashwini KM & Sridhar KR (2006b) Seasonal abundance and activity of pill millipedes (*Arthrosphaera magna*) in mixed plantation and semi-evergreen forest of southern India. *Acta Oecologica* 29 (1): 27–32
- Ashwini KM & Sridhar KR (2006c) Feeding response of an endemic pill millipede *Arthrosphaera magna* Attems to plantation litter. *Journal of Plantation Crops* 34 (1): 58–63
- Ashwini KM & Sridhar KR (2008) Distribution of Pill Millipedes (*Arthrosphaera*) and Associated Soil Fauna in the Western Ghats and West Coast of India. *Pedosphere* 18 (6): 749–757
- Attems C (1897) Myriopoden. *Abhandlungen der Senckenbergischen naturforschenden Gesellschaft* 23: 473–536, pl. 21–24
- Attems C (1898) Myriopoden, in Semon, *Zoologische Forschungsreisen in Australien und dem malayischen Archipel, ausgeführt in den Jahren 1891–93* Jena. *Denkschrift* 5: 507–516, pl. 41
- Attems C (1903) Beiträge zur Myriopodenkunde. *Zoologische Jahrbücher, Abteilung für Systematik, Ökologie und Geographie der Tiere* 18: 63–154, pl. 5–11
- Attems C (1907) Javanische Myriopoden, gesammelt von Direktor K. Kraepelin im Jahre 1903. *Mitteilungen aus dem Naturhistorischen Museum in Hamburg* 24: 77–142, pl. 1–3
- Attems C (1908) Die Myriopoden der Deutschen Südpolar-Expedition. in von Drygalski (ed.), *Deutsche Südpolar-Expedition 1901–1903, Zoologie* 9: 415–433
- Attems C (1910) Myriopoden von Madagaskar, den Comoren und den Inseln Ostafrikas. in Voeltzkow (ed.) *Reise in Ostafrika in den Jahren 1903–1905. Wissenschaftliche Ergebnisse, Systematische Arbeiten* 3: 73–115
- Attems C (1914) Die Indo-australischen Myriopoden. *Archiv für Naturgeschichte* 80A (4): 1–398
- Attems C (1926) Myriopoda. in Kükenthal- Krumbach, *Handbuch der Zoologie* 4: 1–402
- Attems C (1928) The Myriopoda of South Africa. *Annals of the South African Museum* 26: 1–431, pl. 1–26
- Attems C (1932) Myriopoden, in Van Straelen (ed.), *Résultats scientifiques du Voyage aux Indes Orientales Néerlandaises de LL. AA. RR. le Prince et la Princesse Leopold de Belgique. Mémoires du Musée royal d'Histoire naturelle de Belgique (H.S.)* 3 (12): 1–324, pl. 1–6
- Attems C (1934) The Myriopoda of Natal and Zululand. *Annals of the Natal Museum* 7 (3): 459–522
- Attems C (1935) Myriopoden von Sumatra. *Archiv für Hydrobiologie, Supplement* 14: 114–142
- Attems C (1936) Diplopoda of India. *Memoirs of the Indian Museum* 11: 133–323
- Attems C (1938) Die von Dr. C Dawydoff in französisch Indochina gesammelten Myriopoden. *Mémoires du Muséum national d'histoire naturelle (n.s.)* 6: 187–353
- Attems C (1943) Neue Sphaerotheriden des Wiener Museums. *Annalen des Naturhistorischen Museums Wien* 53 (2): 60–73
- Attems C (1953) Myriopoden von Indochina, Expedition von Dr. C Dawydoff (1938–1939) *Mémoires du Muséum national d'histoire naturelle (n.s., A)* 5: 133–230
- Bano K (1983) Millipedes and centipedes. in Veeresh, G. K.; Rajagopal, D. (eds): *Applied soil biology and ecology*. Sharada Publishers. Gangenahalli, Bangalore. 1983 i–vi: 165–182
- Basil-Rose SMR, Ravindranath MH & Mercy SPD (2014) Physico-chemical characterization of a natural agglutin from the hemolymph of a millipede *Thyropygus descriptus*. *Invertebrate Survival Journal* 11: 331–336
- Beron P (2008) High-altitude: Isopoda, Arachnida and Myriapoda in the Old World. Pensoft, Sofia, 1–556
- Bollman CH (1893) The Myriapoda of North America. *Bulletin of the United States National Museum* 46: 1–210
- Bourne GC (1885) On the anatomy of *Sphaerotherium*. *Zoological Journal of the Linnean Society* 19: 161–173
- Brancsik K (1892) Beiträge zur Kenntnis Nossibé's und dessen Fauna nach Sendungen und Mittheilungen des Herrn P. Frey. *Jahrbuch des Naturwissenschaftlichen Vereins des Trencsiner Komitates* 10: 15–16
- Brandt JF (1833) Tentaminum quorundam monographicorum Insecta Myriapoda Chilognatha Latreillti spectantium. *Bulletin de la Société Impériale des Naturalistes de Moscou* 6: 194–209
- Brandt JF (1841a) Remarques critiques sur les espèces qui composent les genres *Sphaerotherium* et *Sphaeropoeus*, suivis d'une description de six espèces nouvelles des Sphaerotheries. *Bulletin Scientifique publié par l'Académie Impériale des Sciences de Saint-Petersbourg* 8: 357–365
- Brandt JF (1841b) Recueil de mémoires relatifs à l'ordre des Insectes Myriapodes, et lus à l'Académie Impériale des Sciences de St.-Petersbourg i–vi: 1–189
- Brölemann HW (1896) Mission Scientifique de M. Ch. Alluaud aux Iles Séchelles (Mars, Avril, Mai 1892) Myriapodes. *Mémoires de la Société Zoologique de France* 8: 518–538
- Brölemann HW (1913) The Myriapoda of the Australian Museum, Part II. Diplopoda. *Records of the Australian Museum* 10: 77–158, pl. 14–18
- Brolemann HW (1922) Liste des myriapodes de l'Académie Malagache de Tananarive. *Bulletin de la Société zoologique de France* 47: 223–278
- Butler AG (1872) Descriptions of new Myriopoda of the family Glomeridae. *Annals and Magazine of Natural History, series 4*, 10: 354–359, pl. 18
- Butler AG (1873) A monographic revision of the genera *Zephronia* and *Sphaerotherium*, with descriptions of new species. *Proceedings of the zoological Society of London* 1873: 172–182, pl. 19
- Butler AG (1874) Descriptions of four new species of Glomeridae from Sikkim. *Annals and Magazine of Natural History, series 4*, 14: 185–187.
- Butler AG (1875) Description of a new species of Myriopod from the borders of Mongolia. *Transaction of the Entomological Society of London* 1875: 165
- Butler AG (1878) Description of several new species of Myriopoda of the genera *Sphaerotherium* and *Zephronia*. *Transaction of the Entomological Society of London* 1878: 299–302
- Butler AG (1882) Descriptions of new species of Myriopoda of the genus *Zephronia* from India and Sumatra. *Annals and Magazine of Natural History, series 5*, 9: 196–198
- Carl J (1906) Diplopoden aus dem Malayischen Archipel. *Zoologisches Jahrbuch Systematik* 24: 227–246, pl. 17
- Carl J (1909) Neue Diplopoden. *Revue suisse de Zoologie* 17: 249–271, pl. 5
- Carl J (1912) Die Diplopoden-Fauna von Celebes. *Revue suisse de Zoologie* 20: 73–206, pl. 5–6
- Carl J (1922) Diplopoden aus Sumatra, Java, Malakka und Ceylon. *Zoologische Jahrbücher Systematik* 44: 565–578
- Chamberlin RV (1920) The Myriopoda of the Australian region. *Bulletin of the Museum of Comparative Zoology Harvard* 64: 1–269

- Chamberlin RV (1921) New Chilopoda and Diplopoda from the East Indian region. *Annals and Magazine of Natural History* (9) 7: 50–87
- Chamberlin RV (1945) On some diplopods from the Indo-Australian Archipelago. *American Museum Novitates* 1282: 1–43
- Chamberlin RV & Wang YM (1953) Records of millipedes (Diplopoda) from Japan and other oriental areas, with descriptions of new genera and species. *American Museum Novitates* 1621: 1–13
- Chowdaiah BN (1966) Cytological Investigations on some Indian Diplopoda (Myriapoda). *Nature* 5038: 847
- Chowdaiah BN & Kanaka R (1974) Cytological studies on six species of Pill-millipedes (Diplopoda-Myriapoda). *Caryologia* 27: 55–64
- Clair JJH (2011) The impacts of invasive rodents on island invertebrates. *Biological Conservation* 144: 68–81
- Clark WC (1978). New species of rhigonematid and thelastomatid nematodes from the pill millipede *Procyliosoma tuberculata* (Diplopoda: Oniscomorpha). *New Zealand Journal of Zoology* 5 (1): 1–6. doi: 10.1080/03014223.1978.10423741
- Cook OF (1895) Introductory note on the families of Diplopoda. in Cook & Collins, *The Craspedosomatidae of North America*. *Annals of the New York Academy of Sciences* 9: 1–100, pl. 1–12
- Daday J (1889) Myriopoda extranea Musaei Nationalis Hungarici. *Természetrzajzi Füzetek* 12: 115–156, pl. 4–5
- Decker P (2013) Annotated checklist of the millipedes (Diplopoda) and centipedes (Chilopoda) of Singapore. *Raffles Museum of Biodiversity Research. National Univers. of Singapore*
- Demange J-M (1969) Myriapodes récoltés à Madagascar par M. L. Bigot. *Bulletin du Muséum national d'histoire naturelle*, 2e série 41: 484–489
- Demange J-M (1977) Harpagophoridae (Myriapodes, Diplopodes) de l'Inde nouveaux ou peu connus. *Bulletin du Muséum national d'histoire naturelle*, 3e série, 301: 231–235
- Deshayes GP & Milne-Edwards H (1838) Histoire naturelle des animaux sans vertèbres par J.P.A. de Lamarck. Tome V, Arachnides, Crustacés, Annelides, Cirripèdes (8) Paris: 1–660
- De Zoysa HKS, Nguyen, AD & Wickramasinghe S (2016) Annotated checklist of millipedes (Myriapoda: Diplopoda) of Sri Lanka. *Zootaxa* 4061 (5): 451–482. <http://doi.org/10.11646/zootaxa.4061.5.1>
- Dohle W (1992) Anamorphic stadia in Sphaerotheriida. *Berichte des naturwissenschaftlich-medizinischen Vereins Innsbruck* 10: 129–135
- Dong Y, Xu JJ, Hao SJ & Sun HY (2012) The complete mitochondrial genome of the giant pill millipede, Sphaerotheriidae sp. (Myriapoda: Diplopoda: Sphaerotheriida) *Mitochondrial DNA* 23(5): 333–335
- Druce D, Hamer M, Slotow R & Prendini L (2004) Checklist of millipedes (Diplopoda), centipedes (Chilopoda) and scorpions (Arachnida: Scorpionida) from a savanna ecosystem, Limpopo Province, South Africa. *African Invertebrates* 45: 315–322
- Druce D, Hamer M & Slotow R (2004) Sampling strategies for millipedes (Diplopoda), centipedes (Chilopoda) and scorpions (Scorpionida) in savanna habitats. *African Zoology* 39 (2): 293–304
- Enghoff H (1977) *Arthrosphaera* cf. *brandti* (Humbert), a giant pill-millipede found in Tanzania, probably introduced from Sri Lanka (Diplopoda: Sphaerotheriidae). *Revue zoologique africaine* 91: 997–989
- Enghoff H (2003) Diplopoda, Millipedes. in Goodman SG & Benstead JP (eds) *The Natural History of Madagascar*. The University of Chicago Press 1760 p.: 617–627
- Enghoff H, Dohle W & Blower GJ (1993) Anamorphosis in millipedes (Diplopoda) – the present state of knowledge with some developmental and phylogenetic considerations. *Zoological Journal of the Linnean Society* 109 (2): 103–234
- Enghoff H, Golovatch SI & Nguyen Duc A (2004) A review of the millipede fauna of Vietnam (Diplopoda). *Arthropoda Selecta* 13 (1–2): 29–43
- Fabricius JC (1775) *Systema Entomologiae*: 1–832
- Fabricius JC (1781) *Spedes Insectorum* (1) i–viii: 1–552
- Fabricius JC (1793) *Entomologia systematica emendata et aucta* 2: i–viii, 1–519
- Fritsch H (1901a) Arthropoda (Hexapoda, Myriopoda). in Fritsch (ed.), *Fauna der Gaskohle und der Kalksteine der Permformationen Böhmens*. Prague 4 (1): 1–32
- Fritsch H (1901b) Myriopoda Pars II. Arachnoidea. in Fritsch (ed.), *Fauna der Gaskohle und der Kalksteine der Permformationen Böhmens*. Prague 4 (2): 33–55
- Flower S (1901) Notes on the Millipedes, Centipedes, Scorpions, etc., of the Malay Peninsula and Siam. *Journal of the Straits Branch of the Royal Asiatic Society* 1901: 1–48
- Gervais P (1837) Études pour servir à l'histoire naturelle des Myriapodes. *Annales des Sciences Naturelles* (2) 7: 35–60, pl. 4
- Gervais P (1844) Etudes sur les Myriapodes. *Annales des Sciences Naturelles* (3, Zool.) 2: 51–80, pl. 5, figs 1–19
- Gervais P (1847) Myriapodes. in Walckenaer & Gervais, *Histoire naturelle Insectes Aptères* 4: 1–333, Atlas, 18–22, pl. 37, 39–45
- Giribet G, Edgecombe GD, Wheeler WC (2001) Arthropod phylogeny based on eight molecular loci and morphology. *Nature* 413: 157–161
- Golovatch SI & Korsos Z (1992) Diplopoda collected by the Soviet Zoological Expedition to the Seychelles Islands in 1984. *Acta Zoologica Hungarica* 38 (1–2): 1–31
- Golovatch SI & Martens J (1996) On the distribution and faunogenesis of Himalayan millipedes (Diplopoda): Preliminary results. in Geoffroy JJ, Mauries JP & Nguyen Duy-Jacquemin M (eds), *Acta Myriapodologica – Mémoires du Muséum National d'Histoire Naturelle* 169, 682 pp, 163–174
- Golovatch SI & Hoffman RL (2001) On the diplopod taxa and type material of J. F. Brandt, with some new descriptions and identities (Diplopoda). *Fragmenta faunistica, Supplement* 43: 229–249
- Golovatch SI, & Gerlach J (2010) Class Diplopoda De Blainville in Gervais, 1844. Arachnida and Myriapoda of the Seychelles islands. *Siri Scientific Press, Manchester*: 387–402
- Golovatch SI, Wesener T, Mauriès J-P, Semenyuk II (2012) On the identities of *Cryxus* Leach, 1814 and *Zephronia* Gray, 1832, the oldest generic names in the millipede order Sphaerotheriida (Diplopoda). *Arthropoda Selecta* 21 (4): 273–294
- Golovatch SI (1983) [Millipedes (Diplopoda) of the fauna of Vietnam]. in Medvedev, LN (Ed.) [Fauna and ecology of the animals of Vietnam.] Nauka, Moscow. 1983: 1–207
- Golovatch SI (2015) Cave Diplopoda of southern China with reference to millipede diversity in Southeast Asia. in Tuf IH, Tajovský K (Eds) *Proceedings of the 16th International Congress of Myriapodology, Olomouc, Czech Republic*. *ZooKeys* 510: 79–94. doi: 10.3897/zookeys.510.8640
- Gowri N & Sethuramkrishnan S (1981) Control activities by the cerebral hormones in a pill millipede *arthrosphaera lutescens*. *The Indian Zoologist* 5 (1–2): 113–118
- Gravely FH (1915) Notes on the habits of Indian Insects, Myriapods and Arachnids. *Records of the Indian Museum* 11: 483–539



- Gray G (1832) The Myriapods (Myriapoda – Mitosata, Fab.). in Griffith E & Pidgeon E, The Class Insecta arranged by the Baron Cuvier, 1: 124–142, pl. 1–2
- Gray JE (1842) in Todd: The Cyclopaedia of Anatomy and Physiology 3
- Gressitt JL (1941) New Myriapods from Formosa and Hainan Island. *Journal of Natural History* 8 (43): 55–61
- Guérin-Ménéville FE (1829–1844) *Iconographie du règne animal de G. Cuvier*, 2, 3 (Paris)
- Haacker U (1969) Das Sexualverhalten von *Sphaerotherium dorsale* (Myriapoda, Diplopoda). *Verhandlungen der Deutschen Zoologischen Gesellschaft* 1968: 454–463
- Haacker U (1974) Patterns of communication in courtship and mating behaviour of millipedes (Diplopoda). *Symposia of the Zoological Society of London* 32: 317–328
- Haacker U & Fuchs S (1972) Tree climbing in pill millipedes. *Oecologia* 10 (2): 191–192
- Hamer ML (1998) Checklist of Southern African millipedes (Myriapoda: Diplopoda). *Annals of the Natal Museum* 39: 11–82
- Hannibal JT & Feldmann RM (1981) Systematics and functional morphology of oniscomorph millipedes (Arthropoda: Diplopoda) from the Carboniferous of North America. *Journal of Paleontology* 55: 730–746
- Heath J, Bocock KL & Mountford MD (1974) The life history of the millipede *Glomeris marginata* (Villers) in north-west England. in *Symposia of the Zoological Society of London* 32: 433–462
- Herbert DG (2000) Dining on diplopods: remarkable feeding behaviour in chlamydephorid slugs (Mollusca: Gastropoda). *Journal of Zoology* 251 (1): 1–5
- Herbert DG, Hamer ML, Mander M, Mkhize N & Prins F (2003) Invertebrate animals as a component of the traditional medicine trade in KwaZulu-Natal, South Africa. *African Invertebrates* 44 (2): 1–18
- Hirst AS (1907) On four new Pill-Millipedes from the Malay Peninsula and Siam. *Annals and Magazine of natural History, series 7*, 20: 215–219, pl. 10
- Hoffman RL (1976) The systematic status of the diplopod genus *Rajasphaera* Attems, 1935 (Sphaerotheriida) *Entomologische Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 5: 117–126
- Hoffman RL (1979) 1980 Classification of the Diplopoda. Geneva. 237 pp.
- Holloway BA (1956) Revision of the New Zealand Pill Millipedes (Oniscomorpha, Sphaerotheriidae) *Transactions of the Royal Society of New Zealand* 84: 431–446
- Hugot JP, Morand S & van Waerebeke D (1991) On genus *Desmicola* (Nematoda, Thelastomatidae) with description of two new species. *Research and Reviews in Parasitology* 51: 65–74
- Humbert A (1865) *Essai sur les Myriapodes de Ceylan. Mémoires de la Société de physique et d'histoire naturelle de Genève* 18: 1–62, pl. 1–5
- Hunt DJ (2002) The African Rhigonematoidea (Nematoda: Rhigonematida) 2. Six new species of *Rhigonema* Cobb, 1898 (Rhigonematidae). *Nematology* 4 (7): 803–827. DOI: 10.1163/156854102760402595
- Hutton FW (1877) Description of new species of New Zealand Myriapods. *Annals and Magazine of Natural History, ser. 4*, 20: 114–120
- Hutton FW (1878) Notes on the New Zealand Myriopoda in the Otago Museum. *Transactions and Proceedings of the Royal Society of New Zealand* 10: 289–293
- Iatrou GD & Stamou GP (1991) The life cycle and spatial distribution of *Glomeris balcanica* (Diplopoda, Glomeridae) in an evergreen-sclerophyllous formation in northern Greece. *Pedobiologia* 35 (1): 1–10
- Jamieson BGM (1987) *The Ultrastructure and Phylogeny of Insect Spermatozoa*. Cambridge University Press, 320pp.
- Janardanan KP & Ramachandran P (1983) Observations on 2 New Species of Cephaline Gregarines (Protozoa: Sporozoa) of the Genus *Stenoductus* Ramachandran, 1976 from Sphaerotheriid Millipedes in Kerala, India. *Archiv für Protistenkunde* 127: 405–412
- Jeekel CAW (1951) A new Pill-millipede from the Malayan Peninsula (Diplopoda, Sphaerotheriidae). *Tijdschrift voor Entomologie* 93: 101–107
- Jeekel CAW [1970] (1971) *Nomenclator generum et familiarum Diplopodorum: A list of the genus and family-group names in the Class Diplopoda from the 10th edition of Linnaeus, 1758, to the end of 1957*. *Monografieën van de Nederlandse Entomologische Vereniging* 5: 1–412
- Jeekel CAW (1974) The group taxonomy and geography of the Sphaerotheriida (Diplopoda) *Symposia of the Zoological Society of London* 32: 41–52
- Jeekel CAW (1981) Australian Expedition 1980; legit C.A.W. Jeekel and A.M. Jeekel-Rijvers. List of collecting stations, together with general notes on the distribution of millipedes in eastern Australia and Tasmania. *Verslagen en Technische gegevens Instituut voor Taxonomische Zoölogie* 30: 1–59. <http://www.repository.naturalis.nl/document/550141>
- Jeekel CAW (1986) Millipedes from Australia 10: Three interesting new species and a new genus (Diplopoda: Sphaerotheriida, Spirobolida, Polydesmida) *Beaufortia* 36: 35–50. <http://www.repository.naturalis.nl/document/548690>
- Jeekel CAW (1999) A new pill-millipede from Madagascar, with a catalogue of the species hitherto described from the island (Diplopoda – Sphaerotheriida). *Myriapod Memoranda* 1: 5–21
- Jeekel CAW (2000) A new genus of Sphaeropoeidae from Malaysia (Diplopoda, Sphaerotheriida). *Myriapod Memoranda* 2: 68–70
- Jeekel CAW (2001) A bibliographic catalogue of the Asiatic Sphaerotheriida (Diplopoda). *Myriapod Memoranda* 3: 5–38
- Jocque R (1984) Contributions to the knowledge of the mountain fauna of Malawi (Mission R. Jocque) 4. Diplopoda Sphaerotheriidae. *Revue de Zoologie Africaine* 98 (1): 67–73
- Jolles F & Jolles S (2000) Zulu ritual immunisation in perspective. *Africa* 70 (02): 229–248.
- Kadamannaya BS & Sridhar KR (2009a) Leaf litter ingestion and assimilation by two endemic pill millipedes (*Arthrosphaera*). *Biology and Fertility of Soils* 45: 761–768
- Kadamannaya BS & Sridhar KR (2009b) Diurnal Periodicity of three endemic Pill Millipedes (*Arthrosphaera*) in Western Ghats, India. *Tropical and Subtropical Agroecosystems* 10 (3): 505–513
- Kadamannaya BS, Sreepada KS & Sridhar KR (2010a) Chromosomal Features of the Endemic Pill Millipedes (*Arthrosphaera*: Sphaerotheriidae, Diplopoda) from Western Ghats, India. *Cytologia* 75 (4): 467–475
- Kadamannaya BS, Sridhar KR & Sreepada KS (2010b) Assemblage and distribution of pill millipedes and earthworms in relation to soil edaphic features in the Western Ghats and the west coast of India. *Frontiers of agriculture in China* 4 (2): 243–250. doi 10.1007/s11703-010-0006-1
- Kadamannaya BS, Ambarish CN & Sridhar KR (2012). Morphological Features of Three Endemic Pill-Millipedes of the Genus *Arthrosphaera* in the Western Ghats of India. *Animal Biology Journal* 3 (4): 181–193



- Kanaka R & Chowdaiah BN (1974) Studies on the male reproductive pattern in some Indian Diplopoda (Myriapoda). Symposium of the Zoological Society of London 32: 261–272
- Kämpfer P, Arun AB, Young CC, Wen-Ming C, Sridhar KR & Rekha PD (2010) *Chryseobacterium arthrosphaerae* sp. nov., isolated from the faeces of the pill millipede *Arthrosphaera magna* Attems. Internat. Journal of Systematic and Evolutionary Microbiol. 60: 1765–1769. doi 10.1099/ijs.0.016840-0
- Kämpfer P, Rekha PD, Schumann P, Arun AB, Young CC, Chen W & Sridhar KR (2011) *Microbacterium arthrosphaerae* sp. nov., isolated from the faeces of the pill millipede *Arthrosphaera magna* Attems. International Journal of Systematic and Evolutionary Microbiology 61: 1334–1337. doi 10.1099/ijs.0.026401-0
- Karandikar KR & Rogdi SS (1955) Gregarines from the millipedes of Bombay-Kamatak. Journal of the University of Bombay B 24 (8): 11–37
- Karsch F (1881) Zur Formenlehre der pentazonen Myriopoden. Archiv für Naturgeschichte: 47 (1); 19–35
- Kirk TW (1885) Description of a new Pill-Millipede. Transactions and Proceedings of the Royal Society of New Zealand 18: 139–140
- Koch CL (1847) System der Myriapoden (Pustet, Regensburg). 270 pp, 10 pl.
- Koch CL (1863) Die Myriapoden, 1: 1–134, pl. 1–60; 2: 1–112, pl. 61–119
- Koch M (2015) Diplopoda – General Morphology. in Minelli A (ed.) Treatise on Zoology, The Myriapoda 2: 7–68
- Korsos Z (1983) Diplopod types in the Hungarian Natural History Museum, 1. Annales historico-naturales Musei Nationalis Hungarici 75: 117–120
- Kunte BG (1974) Maharashtra State Fauna. Gazetteer of India : 1–707
- Latreille PA (1804) Histoire naturelle, generale et particuliere, des Crustaces et des Insectes 7: 1–413, pl. 58–66
- Latreille PA (1810) Considerations generales sur l'ordre naturel des animaux composant les classes des Crustaces, des Arachnides, et des Insectes: 1–444
- Latzel R (1884) Die Myriopoden der österreichisch-ungarischen Monarchie 2: 1–414, pl. 1–16
- Lawrence RF (1953) The biology of the cryptic fauna of forests with special references to the indigenous forests of South Africa. A. A. Balkema, Cape Town
- Lawrence RF (1954) Fluorescence in Arthropoda. Journal of the Entomological Society of South Africa 17 (2): 167–170
- Lawrence, RF. 1966. The Myriapoda of the Kruger National Park. Zoologica Africana 2 (2): 225–262
- Lawrence RF (1987) The centipedes and millipedes of Southern Africa. A Guide. A. Balkema, Cape Town
- Leach WE (1814) Crustaceology, Myriapoda. in Brewster (ed.), The Edinburgh Encyclopaedia 7: 386–387, 407–408, 434–436, pl. 221
- Lenz H (1880) Myriapoden von Nossi-Bé. Berichte der senckenbergischen naturforschenden Gesellschaft 1880: 153–155
- Linn I, Perrin MR & Hiscocks K (2007) Use of space by the four-toed elephant-shrew *Petrodromus tetradactylus* (Macroscelididae) in Kwazulu-Natal (South Africa). Mammalia 71 (1): 30–39
- Linnaeus C (1758) Systema Naturae (Editio Decima, Reformata) 1: 1–823
- Linnaeus C (1759) Amoenitates Academicæ 4: 230–260, pl. 3
- Likhitrakarn N, Golovatch SI & Panha S (2014) A checklist of the millipedes (Diplopoda) of Laos. Zootaxa 3754 (4): 473–482. <http://dx.doi.org/10.11646/zootaxa.3754.4.8>
- Likhitrakarn N, Golovatch SI & Panh, S (2015) A checklist of the millipedes (Diplopoda) of Cambodia. Zootaxa 3973 (1): 175–184. <http://dx.doi.org/10.11646/zootaxa.3973.1.7>
- Lucas M (1842) Histoire naturelle des Crustacés, des Arachnides et des Myriapodes. Paris, Duménil : 1–601
- Main BY, Harvey MS & Waldo JM (2002) The distribution of the Western Australian pill millipede, *Cynotelopus notabilis* Jeekel (Sphaerotheriidae). Records of the Western Australian Museum 20: 383–385
- Manton SM (1954) The Evolution of arthropodan locomotory mechanisms. Part 4: The structure, habits and evolution of the Diplopoda. Journal of the Linnean Society of London, Zoology 42: 299–368.
- Marek PE, Bond JE, & Sierwald P (2003) Rhinocricidae systematics II: a species catalogue of the Rhinocricidae (Diplopoda: Spirobolida) with synonymies. Zootaxa 308: 1–108
- Mary Bai M (1997) Millipede Fauna of Delhi. Zoological Survey of India, Madras, State Fauna Series 6: 461–465
- Mary, RF. & Prema, JA (1984) Cuticular waterloss in a pill millipede, *Arthrosphaera disticta*. Indian Zoologist 8 (1–2): 29–32
- Mauriès J-P (1980) Contributions à l'étude de la faune terrestre des îles granitiques de l'archipel des Séchelles (Mission P.L.G. Benoit & J.J. Van Mol 1972) Myriapoda - Diplopoda. Revue zoologique africaine 94 (1): 138–168
- Mauriès J-P (2001) Sur l'identité de *Zephronia hainani* Gressitt, 1941, à propos de la description d'un nouveau *Prionobelum* (Diplopoda, Sphaerotheriida, Sphaeropoeidae) de Hainan, Chine. Zoosystema 23 (1): 131–142
- Mesibov R (2000) An overview of the Tasmanian millipede fauna. Tasmanian Naturalist 122: 15–28
- Mesibov R (2013) Diplopoda. Australian Faunal Directory [Australian Biological Resources Study, Canberra]. 2013
- Moir ML & Harvey MS (2008) Discovery of the pill millipede genus *Epicyllosoma* (Diplopoda: Sphaerotheriida: Sphaerotheriidae) in Western Australia, with the description of a new species. Records of the Western Australian Museum 24: 113–119
- Moir ML, Brennan KEC & Harvey MS (2009) Diversity, endemism and species turnover of millipedes within the south-western Australian global biodiversity hotspot. Journal of Biogeography 36 (10): 1958–1971
- Moritz M & Fischer S-C (1974) Die Typen der Myriapoden-Sammlung des Zoologischen Museums Berlin. I. Diplopoda. Teil. 1. Mitteilungen aus dem Museum für Naturkunde in Berlin 49: 351–385.
- Nandr GD & Joshi PV (1993) On Some New Anatomical Features of the Alimentary Canal of the Pill Millipede *Arthrosphaera dalyi* Pocock (Sphaerothermidae, Diplopoda, Myriapoda). Biovigyanam 19 (1&2): 40–47
- Nattuthurai N & Subbiah GN (1983) Effects of restricted and specific diets on the food preference, haemolymph, and excreta of *Arthrosphaera dalyi*. GEOBIOS 10: 112–116
- Newport G (1844) A list of the species of Myriapoda, Order Chilognatha, contained in the cabinets of the British Museum, with descriptions of a new genus and thirty-two new species. The Annals and magazine of natural history 13: 263–270
- Nguyen Duy-Jacquemin M & Geoffroy JJ (2003) A revised comprehensive checklist, relational database, and taxonomic system of reference for the bristly millipedes of the world (Diplopoda, Polyxenida). African Invertebrates 44 (1): 89–101
- Nguyen AD & Sierwald P (2013) Check list Paradoxosomatidae (Diplopoda, Polydesmida). Check List 9.6: 1132–1133
- Oeyen JP & Wesener T (2015) Steps towards a phylogeny of the pill millipedes: non-monophyly of the family Protoglomeri-

- dae, with an integrative redescription of *Eupeyerimhoffia archimedis* (Diplopoda, Glomerida). ZooKeys 510: 49–64. doi: 10.3897/zookeys.510.8675
- Olivier AG (1792) Histoire naturelle, Insectes. Encyclopedie Methodique 7 (Paris)
- Olliff AS (1882) Description of a new species of the genus *Zephronia*, from Borneo. Cistula entomologica 3: 29–30
- Overdorff DJ (1993) Similarities, differences, and seasonal patterns in the diets of *Eulemur rubriventer* and *Eulemur fulvus rufus* in the Ranomafana National Park, Madagascar. International Journal of Primatology 14 (5): 721–753
- Pandian P (1966) On a new species of pill-millipede (*Arthrosphaera*, Diplopoda) from Madurai. Zoologischer Anzeiger (Jena) 176: 464–468
- Peeters C & De Greef S (2015) Predation on large millipedes and self-assembling chains in *Leptogenys* ants from Cambodia. Insectes Sociaux 62 (4): 1–7
- Pick C, Scherbaum S, Hegedüs E, Meyer A, Saur M, Neumann R & Burmester T (2014) Structure, diversity and evolution of myriapod hemocyanins. FEBS journal 281 (7): 1818–1833
- Pocock RI (1890a) Three new species of *Zephronia* from the Oriental Region. Annali del Museo civico di storia naturale di Genova 29: 79–83
- Pocock RI (1890b) On the Myriopoda of Burma. Pt. 1. Report on the Oniscomorpha collected by Sig. L. Fea, by Mr. E.W. Oates and by the late Sig. G.B. Comotto. Annali del Museo civico di storia naturale di Genova 30: 384–395
- Pocock RI (1892) Report upon two collections of Myriopoda sent from Ceylon by Mr. E.E. Green, and from various parts of southern India by Mr. Edgar Thurston, of the Government Central Museum, Madras. The Journal of the Bombay Natural History Society 7: 131–174, pl. 1–2
- Pocock RI (1893) Report upon the Myriopoda of the ‘Challenger’ expedition, with remarks upon the fauna of Bermuda. Journal of Natural History 11 (62): 121–142
- Pocock RI (1894) Chilopoda, Symphyla and Diplopoda from the Malay Archipelago. in Weber, Zoologische Ergebnisse einer Reise in Niederländisch Ost-Indien 3: 307–404, pl. 19–22
- Pocock RI (1895) Descriptions of new genera of Zephroniidae, with brief diagnoses of some new species. Annals and Magazine of Natural History, series 6, 16: 409–415
- Pocock RI (1899) A monograph of the Pill-Millipedes (Zephroniidae) inhabiting India, Ceylon and Burma. Part I. The Journal of the Bombay Natural History Society 12: 269–285, 465–474
- Porat CO (1872) Myriopoda Africae australis, in Museo Regio Homiae asservata, recensuit. Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar 1872 (5): 346
- Preudhomme de Borre A (1884) Tentamen catalogi Glomeridarum hucusque descriptorum. Annales de la Société Entomologique de Belgique 1884: 19–28
- Pryke JS & Samways MJ (2010) Significant variables for the conservation of mountain invertebrates. Journal of insect conservation 14 (3): 247–256
- Racheboeuf PR, Hannibal JT & Vannier J (2004) A new species of the diplopod *Amynilyspes* (Oniscomorpha) from the *Stephania* lagerstätte of Montceau-le- Mines, France. Journal of Paleontology 78: 221–229
- Ramanathan B & Alagesan P (2012a) Population Dynamics of Two Millipedes in Alagarmalai Hills of Tamil Nadu. World Journal of Zoology 6 (4): 364–369
- Ramanathan B & Alagesan P (2012b) Isolation, characterization and role of gut bacteria of three different millipede species. Indian Journal of Scientific Research 3(2): 55–61
- Rangaswamy HR, Viswanath BN & Govindan R (1978) Progress of research on Diplopoda in Karnataka. UAS Technical Series / University of Agricultural Sciences Hebbal 22: 98–105
- Rangaswamy HR, Devaiah MC, Govindan R & Thippeswamy C (1983) Progress of Research on Diplopoda in India. College of Agriculture, Department of Zoology and Entomology, Dharwad 580005: 1–41
- Raseroka BH (1975) Diet of the Hadedah Ibis. Ostrich 46 (1): 51–54
- Redi BH, Van Aarde RJ & Wassenaar TD (2005) Coastal dune forest development and the regeneration of millipede communities. Restoration Ecology 13 (2): 284–291
- Regier JC, Wilson HM & Shultz JW (2005) Phylogenetic analysis of Myriapoda using three nuclear protein-coding genes. Molecular phylogenetics and evolution 34 (1): 147–158
- Richter S, Edgecombe GD & Wilson GDF (2002). The *lacinia mobilis* and similar structures: A valuable character in arthropod phylogenetics? Zoologischer Anzeiger 241 (4): 339–361
- Roberts PD, Somers MJ, White RM & Nel JA (2007) Diet of the South African large-spotted genet, *Genetta tigrina* (Carnivora, Viverridae) in a coastal dune forest. Acta Theriologica 52 (1): 45–53
- Rossi W & Weir A (1998) *Triainomyces*, a new genus of Laboulbeniales on the pill-millipede *Procyliosoma tuberculatum* from New Zealand. Mycologia 90 (2): 282–289
- Sanyal, AK, Alfred, JRB, Venkataraman, K., Tiwari, S.K. & Mitra, S. (2012) *Status of Biodiversity of West Bengal*. Zoological Survey of India, Kolkata, 969 pp
- Sarasu C & Sivagamasundari S (1982) Hardening of the egg-shell of a pill-millipede *Arthrosphaera lutescens* (Diplopoda: Myriapoda). The Indian Zoologist 6 (1–2): 73–75
- Saussure H de & Zehntner L (1897) Myriapodes de Madagascar. in Grandidier (ed.), Histoire Physique, Naturelle et Politique de Madagascar: pl. 1–12
- Saussure H de, & Zehntner L (1901) Myriopoden aus Madagascar und Zansibar. Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft 26: 429–460
- Saussure H de & Zehntner L (1902) Myriapodes de Madagascar. in Grandidier (ed.), Histoire Physique, Naturelle et Politique de Madagascar 27 (53): 1–356, pl. 13–15
- Schubart O (1958) Diplopoda II: Oniscomorpha. in Hanström B, Brinck P, Rudebeck G (Eds) South African Animal Life 5: 41–108
- Shear WA (2015) The chemical defenses of millipedes (diplopoda): Biochemistry, physiology and ecology. *Biochemical Systematics and Ecology* 61: 78–117. <http://dx.doi.org/10.1016/j.bse.2015.04.033>
- Shear WA & Edgecombe GD (2010) The geological record and phylogeny of the Myriapoda. Arthropod Structure & Development 39 (2): 174–190
- Shelley RM, Sierwald P, Kiser SB & Golovatch SI (2000) Nomenclator generum et familiarum Diplopodorum II: 1–167
- Shelley RM & Golovatch SI (2011) Atlas of Myriapod Biogeography. I. Indigenous Ordinal and Supra-Ordinal Distributions in the Diplopoda: Perspectives on Taxon Origins and Ages, and a Hypothesis on the Origin and Early Evolution of the Class. Insecta Mundi: 1–134
- Shields M (2008) *Procyliosoma (Procyliosoma) delacyi delacyi* (White) (Diplopoda: Sphaerotheriidae) feeding on lichen. The Weta 35: 33
- Silvestri F (1895a) Chilopodi e Diplopodi della Papuasias. Annali del Museo civico di storia naturale di Genova 34: 619–659



- Silvestri F (1895b) Chilopodi e Diplopodi di Sumatra e delle Isole Nias, Engano e Mentavei. *Annali del Museo civico di storia naturale di Genova* 34: 707–760
- Silvestri F (1896a). Diplopodi di Borneo. *Annali del Museo civico di storia naturale di Genova* 36: 20–28
- Silvestri F (1896b) I Diplopodi. *Annali del Museo civico di storia naturale di Genova* 36: 121–254
- Silvestri F (1897a) Neue Diplopoden. *Abhandlungen und Berichte des K. Zoologischen und Anthropologisch-Ethnographischen Museums zu Dresden* 6 (9): 1–23, pl. 1–3
- Silvestri F (1897b) Description des especes nouvelles de Myriapodes du Musee royal d'Histoire naturelle de Bruxelles. *Annales de la Société entomologique belge* 41: 345–362
- Silvestri F (1897c) Systema Diplopodum. *Annali del Museo civico di storia naturale di Genova* 38: 644–651
- Silvestri F (1898) Note sui Chilopodi e Diplopodi conservati nel Museo Zoologico Firenze I: Alcuni nuovi Diplopodi del Queensland (Cairns) *Bullettino delle Società Entomologica Italiana* 29 (4): 1–8
- Silvestri F (1910) Materiali per una revisione dei Diplopoda Oniscomorpha. I. Specie del genere *Sphaerotherium* dell'Africa meridionale a me note. *Bollettino del Laboratorio di Zoologia generale e agraria della R. Scuola superiore d'Agricoltura in Portici* 4: 180–220
- Silvestri F (1917) Materiali per una revisione dei Diplopoda Oniscomorpha. II. Specie di Sphaerotheridae delle regioni australiana e neozelandese a me note. *Bollettino del Laboratorio di zoologia generale e agraria della Facoltà agraria in Portici* 12: 61–85
- Sinclair FG (1901) On the Myriapods collected during the “Skeat Expedition” to the Malay Peninsula, 1899–1900. *Proceedings of the Zoological Society of London* 1901: 505–533, pl. 30–32
- Sridhar KR & Ambarish CN (2013) Pill millipede compost: a viable alternative to utilize urban organic solid waste. *Current Science* 104 (11): 1543–1547
- Sridhar KR & Ashwini KM (2016) Diversity, restoration and conservation of millipedes. *in* Regency Publications, New Delhi, *Biodiversity in India* 5: 1–38
- Sridhar KR & Kadamannaya BS (2009) Pill Millipedes - An Overview. *in* Organic Farming: methods, Economics and Structure, Nelson, M. & Artamova, I. (Eds.), Nova Science Publishers, pp. 59–91
- Sridhar KR, Kadamannaya BS & Karamchand KS (2013) Nutrient composition of pill millipede manure of the Western Ghats, India. *Journal of Forestry Research* 24 (3): 539–545
- Sridhar KR (2015) Diversity, importance and conservation of pill millipedes (Sphaerotheriida, Diplopoda) of the Western Ghats. *in* (DR. Priyadarsanan et al. Eds) *Invertebrate Diversity and Conservation in the Western Ghats*, Ashoka Trust for Research in Ecology and Environment, Bangalore (ATREE), India, 17: 1–16
- Sukteeka S & Thanee N (2015) Distribution of Giant Pill-Millipedes (*Zephronia* cf. *viridescens*) and Flat-backed millipedes (*Orthomorpha variegata*) in Relation to Ecological Factors at Sakaerat Environmental Research Station, Thailand. *International Journal of Advances in Agricultural and Environmental Engineering*, 2 (1): 18–22. <http://dx.doi.org/10.15242/IJAAEE.C0415022>
- Rajulu SG (1970) A catalogue of Myriapoda of India. (Part I). *Journal of the Madras University, serie B*, 1: 111–149
- Stagl & Schiller, in prep.
- Stoev PE, Sierwald P & Billey A (2008) An annotated world catalogue of the millipede order Callipodida. *Zootaxa* 1706: 1–50
- Takakuwa Y (1942) Die Myriopoden von Formosa, Philippinen, u. s. w. *Transactions of the Natural History Society of Formosa* 32 (231): 359–367
- Temple HJ, Anstee S, Ekstrom J, Pilgrim JD, Rabenantoandro J, Ramanamanjato J-B, Randriatafika F & Vincelette M (2012) Forecasting the path towards a Net Positive Impact on biodiversity for Rio Tinto QMM. Gland, Switzerland: IUCN. x + 78 pp
- Thorstrom R & Lind J (1999) First nest description, breeding, ranging and foraging behaviour of the Short-legged Ground Roller *Brachypteracias leptosomus* in Madagascar. *Ibis* 141: 569–576
- Tömösváry E (1885). Myriopoda a Joanne Xantus in Asia Orientali collecta. *Természeti Füz.* 9: 63–72, pl. 3–5
- Varadaraj K, Sundara Raj P & Sivagamasundari S (1983) Haemocytes of a pill-millipede *Arthrosphaera transitiva* Carl. *The Indian Zoologist* 7 (1–2): 197–200
- van den Spiegel D (2002) On the occurrence of *Sphaerotherium punctulatum* in Malawi (Diplopoda: Sphaerotheriidae) *Annalen, Koninklijk Museum voor Midden-Afrika – Zoologische wetenschappen* 290: 171–174
- van den Spiegel, D, Golovatch SI, Hamer ML (2002) Revision of some of the oldest species in the millipede genus *Sphaerotherium* Brandt, 1833 (Diplopoda, Sphaerotheriida, Sphaerotheriidae), with new synonymies. *African Invertebrates* 43: 143–181
- Verhoeff KW (1910–1914) Die Diplopoden Deutschlands. 1–640, pl. 1–35
- Verhoeff KW (1924) Results of Dr. E. Mjöberg's Swedish scientific expeditions to Australia 1910–1913. *Myriapoda: Diplopoda. Arkiv för zoologi* 16 (5): 1–142, pl. 1–5
- Verhoeff KW (1928–1932) Klasse Diplopoda. *in* Bronn's Klassen und Ordnungen des TierReichs 5 (2): 1–1071, pl. 1–11, 1073–2084
- Verhoeff KW (1930) Über einige Chilognathen aus Ceylon, nebst vergleichend morphologischen Notizen. *Zoologischer Anzeiger* 89: 193–210
- Verhoeff KW (1937) Zwei neue Myriapoden-Gattungen aus Indien und ihre Stellung. *Zoologischer Anzeiger* 120: 81–89.
- Verhoeff KW (1939) Über eine neue *Tonkinobelum*-Art der Sphaerotheriidae. *Fysiografiska Sällskapets i Lund Föreläsningar* 9 (17): 1–3
- Waerebeke D van (1984) *Rhigonema madecassum*, n.sp. (Rhigonematidae: Nematoda), parasite d'un Diplopode de Madagascar: Description de l'espèce et étude de la spermatogenèse. *Revue de Nematologie* 7 (3): 271–276
- Waerebeke D van (1985a) *Glomerinema ratsimamangi* n.gen., n.sp. (Nematoda, Rhigonematidae) parasite de Glomeris (Diplopode) a Madagascar: description et spermiogenese. *Annales de Parasitologie Humaine et Comparee* 60 (1): 23–32
- Waerebeke D van (1985b) Trois nouvelles especes de Glomerinema van Waerebeke, 1985 (Rhigonematidae, Nematoda) parasites de Sphaerotheroidea (Glomerida, Diplopoda) a Madagascar. *Revue de Nematologie* 8 (3): 229–239
- Waerebeke, D van (1986) *Rhigonema erringtoni* n. sp. (Rhigonematidae: Nematoda) parasite de Sphaerotheriida (Diplopoda) de la presqu'île de Malacca. *Revue de Nematologie* 9 (2): 115–117
- Wang DQ & Zhang CZ (1993). Diplopoda, Chilopoda. *in* Huang (Ed.) *Animals of Longqi Mountain*. China Forestry Publishing House. 1–1105: pp. 845–851
- Wang YM (1950) [1951] The Myriopoda of the Philippine Islands. Thesis, Utah: i–v, 1–80



- Wang YM (1961) Serica 11: The Diplopoda of the Philippine Islands. A revision of the Myriapoda of the Philippine Islands. Quarterly journal of the Taiwan Museum 14: 89–140, pl. 11
- Wang, YM., (1967) Serica IT: Supplement to the Millipedes and the Centipedes of Malay Archipelago and South Sea Islands, Singapore, Sarawak and Sumatra. Quarterly journal of the Taiwan Museum 20: 383–390
- Warren E (1934) On the male genital system and spermatozoa of certain millipedes. Annals of the Natal Museum 7 (3): 351–407
- Weidner H (1960) Die Entomologischen Sammlungen des Zoologischen Staatsinstituts und Zoologischen Museums Hamburg 3. Teil, Chilopoda und Progoneata. Mitteilungen aus dem Hamburgischen Zoologischen Museum u. Institut 58: 57–104
- Wesener T & Sierwald P (2005a) New giant pill-millipede species from the littoral forest of Madagascar (Diplopoda, Sphaerotheriida, *Zoosphaerium*). Zootaxa 1097: 1–60
- Wesener T & Sierwald P (2005b) The Giant Pill-Millipedes of Madagascar: Revision of the Genus *Sphaeromimus*, with a Review of the Morphological Terminology (Diplopoda, Sphaerotheriida, Sphaerotheriidae). Proceedings of the California Academy of Sciences, Fourth Series, 56 (29): 557–599
- Wesener T & van den Spiegel D (2007) *Microsphaerotherium ivohibense*, a new genus and species of Giant-Pill Millipedes from Madagascar (Diplopoda, Sphaerotheriida, Arthrosphaerinae). Journal of Afrotropical Zoology 3: 153–160
- Wesener T & van den Spiegel D (2009) A first phylogenetic analysis of Giant Pill-Millipedes (Diplopoda: Sphaerotheriida), a new model Gondwanan taxon, with special emphasis on island gigantism. Cladistics 25: 545–573
- Wesener T & Wägele J-W (2007) Giant Pill-Millipedes (Diplopoda: Sphaerotheriida) in the Littoral Forest Fragments of Southeastern Madagascar. in Biodiversity, Ecology and Conservation of Littoral Ecosystems in Southeastern Madagascar, Tolagnaro (Fort Dauphin) J Ganzhorn, SM Goodman & M Vincelette (eds), Smithsonian Institution, Washington D.C., SI/MAB Series 11: 145–151
- Wesener T & Wägele J-W (2008) The giant pill-millipedes of Madagascar: revision of the genus *Zoosphaerium* (Myriapoda, Diplopoda, Sphaerotheriida) Zoosystema 30 (1): 5–85
- Wesener T, Bepalova I & Sierwald P (2010) Madagascar's living giants: discovery of five new species of endemic giant pill-millipedes from Madagascar (Diplopoda: Sphaerotheriida: Arthrosphaeridae: *Zoosphaerium*). African Invertebrates 51 (1): 133–161
- Wesener T, Raupach MJ & Sierwald P (2010) The origins of the Giant Pill-Millipedes from Madagascar (Diplopoda: Sphaerotheriida: Arthrosphaeridae). Molecular Phylogenetics and Evolution 57: 1184–1193
- Wesener T & Schütte K (2010) Swarming behaviour and mass occurrences in the world's largest Giant Pill-Millipede species, *Zoosphaerium neptunus*, on Madagascar and its implication for conservation efforts (Diplopoda: Sphaerotheriida). Madagascar Conservation and Development 5 (2): 89–94
- Wesener T, Köhler J, Fuchs S & van den Spiegel D (2011) How to uncoil your partner—"mating songs" in giant pill-millipedes (Diplopoda: Sphaerotheriida). Naturwissenschaften 98 (11): 967–975
- Wesener T, Le DM-T, Loria SF (2014) Integrative revision of the giant pill-millipede genus *Sphaeromimus* from Madagascar, with the description of seven new species (Diplopoda, Sphaerotheriida, Arthrosphaeridae). ZooKeys 414: 67–107. doi: 10.3897/zookeys.414.7730
- Wesener T (2006) Giant-pill millipede diversity on Madagascar (Diplopoda: Sphaerotheriida) Peckiana 4: 189–193
- Wesener T (2009) Unexplored richness: discovery of 31 new species of Giant Pill-Millipedes endemic to Madagascar, with a special emphasis on microendemism (Diplopoda, Sphaerotheriida) Zootaxa 2097: 1–134
- Wesener, T. (2014a) A new phylogenetic analysis of the Sphaerotheriida (Diplopoda) with a revision of the Australian giant pill millipedes. Invertebrate Systematics 28 (2): 196–213. <http://dx.doi.org/10.1071/IS13048>
- Wesener T (2014b) The identity of Australia's northern-most giant pill-millipedes (Diplopoda, Sphaerotheriida) Zootaxa 3861 (4): 363–368. <http://dx.doi.org/10.11646/zootaxa.3861.4.6>
- Wesener T (2015) The Giant Pill-Millipedes of Nepal (Diplopoda, Sphaerotheriida, Zephroniidae) Zootaxa 3964 (3): 301–320
- White A (1859) Spicilegium Aptero-logica. I. Description of some Myriapoda of the genus *Zephronia* (J.E. Gray), in the collection of the British Museum. Annals and Magazine of Natural History, series 3, 3: 404–406, pl. 7
- Wongthamwanich N, Panha S, Sierwald P, Wesener T & Thirakhupt K (2012) A new species of the giant pill-millipede genus *Sphaerobelum* Verhoeff, 1924 from northern Thailand, with an extensive description and molecular characters (Diplopoda: Sphaerotheriida: Zephroniidae). Zootaxa 3220: 29–43
- Wongthamwanich N, Panha S, Sitticharoenchai D, Pradatsundarasar A-O, Seelenan T, Enghoff H & Thirakhupt K (2012) Daily Activities of the Giant Pill-Millipede *Zephronia cf. viridescens* Attems, 1936 (Diplopoda: Sphaerotheriida: Zephroniidae) in a Deciduous Forest in Northern Thailand. Zoological Studies 51(7): 913–926
- Wood HC (1865) The Myriapoda of North America. Transactions of the American Philosophical Society, New Series 13: 137–248
- Zhang CZ & Li ZY (1982) Eine neue Art vom *Chinosphaera* (Sphaerotheriida, Diplopoda) aus China. Acta Zootaxonomica Sinica 7 (2): 152–154



## Summary

This monograph provides the first comprehensive overview of the current state of knowledge of the ecology, development, morphology, and diversity of the giant pill-millipedes, order *Sphaerotheriida*. It summarizes all known aspects of the life history and ecology, including predators and parasites, of giant pill-millipedes and maps the biogeography of the order and its families. This work includes illustrations, primarily based on scanning electron microscopy images, of all major general morphological characters of the giant pill-millipedes. To capture the intraordinal variation of giant pill-millipedes, it further includes illustrations of the female vulva and male posterior telopods of all known main groups and genera of the order. In addition, the monograph provides a detailed list of all 39 known unique characters of members of the *Sphaerotheriida*.

The catalogue part presents the first complete list of all described species, genera, and higher categories of the giant pill-millipedes. It includes a key to all five *Sphaerotheriida* families, short descriptions of the key characters for each of the 24 genera, and a list of all 351 valid *Sphaerotheriida* species with their synonyms. For each species, the catalogue further provides the number and location of type depositories as well as the locality data from the literature. For each family, genus, and species it includes bibliographic citations, including all subsequent citations, in chronological order. The monograph also contains a complete reference list with more than 280 entries about the *Sphaerotheriida*.

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The Montagne de Français giant pill-millipede, *Zoosphaerium solitarium* Wesener, 2009, one of Madagascar's numerous microendemic species, occurring only on top of a single karstic hill in northern Madagascar. Photos by Jörn Köhler, Darmstadt.